V. v.16:3
The Ontario Institute for Studies in Education Library
OISE CIR
3 0005 03044 7042
155.4 I64U v.16 no.3 c.1
Iowa Child Welfare Research
University of Iowa studies
R W B JACKSON LIBRARY

v Series No. 380 February, 1940

UNIVERSITY OF IOWA STUDIES

STUDIES IN CHILD WELFARE

Vol. XVI No. 3

STUDIES IN TOPOLOGICAL AND VECTOR PSYCHOLOGY I

by

Kurt Lewin
Ronald Lippitt
and
Sibylle Korsch Escalona

PUBLISHED BY THE UNIVERSITY OF IOWA PRESS
IOWA CITY, IOWA

THE LIBRARY

The Ontario Institute

for Studies in Education

Toronto, Canada

STUDIES IN TOPOLOGICAL AND VECTOR PSYCHOLOGY I

ONTARIO COLLEGE OF EDUCATION
DEPT. OF EDUCATIONAL RESEARCH
UNIVERSITY OF TORONTO

by

Kurt Lewin
Ronald Lippitt
and
Sibylle Korsch Escalona

George D. Stoddard, Ph.D., Editor
University of Iowa Studies
Studies in Child Welfare
Volume XVI, No. 3

LIBRARY
NOV 11 1970
THE ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

Published by the University of Iowa Press
Iowa City, Iowa
1940

4238

FOREWORD

This beginning study in a new Station series in topological psychology enables the student of psychology to make a fresh start in the understanding and utilization of Dr. Lewin's methods. For many, it will prove to be a more helpful introduction than his recent theoretical work entitled *Principles of Topological Psychology*, for his theories are presented here in conjunction with two substantial experiments to appease pragmatic appetites. At the same time Dr. Lewin, by a careful exposition of the work of one of his earlier students, B. Zeigarnik, relates these materials to the topological accomplishments of the preceding decade.

A confused critic was heard to remark recently at a psychological meeting: "Every psychologist must now study Lewin, if only to reject him!" Certain it is that all psychologists are interested in Dr. Lewin's major attempt to employ new methods of formulating and mathematizing in psychology in such a way as to retain the basic and primary demands of psychology itself. His dynamic theories lead to certain derivatives whose experimental confirmation rightly is held to be of special significance.

In these earlier studies the constructs have been kept semi-mathematical, as against nonmathematical (which would be confusing) or a display of mathematical technicalities that become devoid of psychological meaning. The work moves forward with two feet upon the ground: one theoretical or conceptual, the other experimental. This method of progress at once precludes futile, nonoperational web-spinning and restricts the opportunistic, repetitive scooping in of data. The *why* and the *what* are brought into mutual relationship; they are made to serve each other. The validity of this process rests upon its demonstrated fruitfulness.

In the hodological space called for in Lewin's field theories, a man physically "running away from a bear" may psychologically be "running toward it," if his real goal is eventual bear-attack and bear-destruction. In emotion and personality, such a psychological field theory offers some hope of conceptualization.

That Lewin and his colleagues are willing to attack the hard problems that lie at the heart of social psychology (although out on the periphery of psychology as revealed to most pre-Gestalt workers), is in itself encouraging. It may be that some thoroughly

conquered territory in this difficult terrain will admit these radical tacticians to the so-called central territory. Another prediction is that the center of psychology will itself be further shifted from its anatomical, physiological, and biological preoccupation to an acceptance of social psychology as the focus of all future inquiry into human behavior.

Some psychologists are loath to make any concession to the elementary principles of topological psychology for fear that they will be compelled to give up much that has become familiar and comforting. Often they have traded in the old car for a new model; but a new form of locomotion, a car for a horse or a plane for a car —that is another question. At first the good horse seems so much better than the sputtering car that the latter's promise is overlaid with reactions of rejection and frustration. So with new psychological tools: they are unconsciously resisted. But the test comes when there is important work to do, as there is today in psychology. One can only suggest that in the vigorous application of these new implements of synthesis and analysis, by nonbelievers as well as believers, there will come about a recognition of their true worth.

Mr. Lippitt's study of the effects of democratic and authoritarian group atmosphere is presented as a well-documented account of an elaborate Lewinian experiment in a hitherto practically inaccessible area of social psychology. It is a first step, but a big one, in the direction of more adequate insights into the problems of human behavior engendered by forces arising out of group situations. Moreover the closeness of Lippitt's laboratory to the "real world" renders its main conclusions, e. g., on the social effectiveness of democratic procedures, applicable with unusual directness and reliability to certain fundamental problems in the school and the home, and in society as a whole.

Similarly, Mrs. Escalona in her study of some aspects of behavior in cases of manic-depressive psychoses reveals the fruitfulness of the Lewinian techniques. Her work, centering upon the concept *level of aspiration*, which had been explored in an original fashion by Tamara Dembo, gives us further theoretical insights into the nature of certain abnormalities of behavior, insights that help to resolve conflicting observations arising from psychoanalytic or other clinical procedure.

GEORGE D. STODDARD

Office of the Director
Iowa Child Welfare Research Station
University of Iowa
January 22, 1940

CONTENTS

PART ONE: FORMALIZATION AND PROGRESS IN PSYCHOLOGY

Kurt Lewin

	Page
I.	9
II.	13
III.	17
IV.	18
V.	28
VI.	31
VII.	33
Bibliography	38
Additional References	42

PART TWO: AN EXPERIMENTAL STUDY OF THE EFFECT OF DEMOCRATIC AND AUTHORITARIAN GROUP ATMOSPHERES

Ronald Lippitt

Aim of the Study	45
Related Studies	45
Problems of Methodology and Experimental Technique	51
Group Log	75
Results and Interpretations	102
Concluding Statements	191
References	193

PART THREE: THE EFFECT OF SUCCESS AND FAILURE UPON THE LEVEL OF ASPIRATION AND BEHAVIOR IN MANIC-DEPRESSIVE PSYCHOSES

Sibylle Korsch Escalona

The Problem	199
Experimental Procedures	207
The Qualitative Analysis	211
The Quantitative Analysis	228
Topology of the Level of Aspiration Situation	256
Differences in the Onset and Course of the Illness in Motor Retarded and Decision Retarded Subjects	291
The Relationship Between Our Findings and Some of the Suggested Theories of Abnormal and Normal Mood Changes	296
Summary	299
References	301
Appendix to Part Two	303

PART ONE

FORMALIZATION AND PROGRESS IN PSYCHOLOGY

by

Kurt Lewin

FORMALIZATION AND PROGRESS IN PSYCHOLOGY

I

The series of larger research articles which it is hoped will begin with this publication, is planned both as a new start and as a continuation. It is a continuation of a series containing twenty articles published during the years 1926 to 1937 under the general title: "Investigations in the Psychology of Action and Emotion" (37). It is a new start, because the new studies grew not only geographically in a new environment: they try to apply, in addition to the methods previously used, more elaborate statistical techniques whenever this appears suitable, and to adapt those techniques to the spirit of the former studies.

At such an occasion it might be appropriate to review briefly the state of affairs: what have been the guiding principles of the work thus far? what has been the result? and what are the steps to follow?

Nearly all the studies mentioned have grown out of certain theoretical expectations. They have been designed to prove or to disprove certain assumptions. In other words, they were definite questions put to nature. The attempt was made to formulate these questions as sharply as possible, because nature likewise cannot give a clear and definite answer to a vague question.

On the whole, psychologists were at that time rather adverse to theory. Governed by a näive metaphysical belief, they were apt to consider "fact finding" the only task of "scientific" psychology, and were particularly sceptical of the idea of psychological laws in the field of needs, will and emotion, that is, in fields other than perception and memory.

In the last five years a very marked change in the attitude of American psychology, which today is by far the most important center of psychological work, has been noticeable. A definite interest in psychological theory has emerged, due partly to the effort of a few psychologists (particularly Tolman and Hull in animal psychology). The need for a closer fusion of the various branches of psychology demands tools which permit better integration. The

practical tasks of mental hygiene and education demand conceptual tools which permit prediction. Neither demand can be met without theory. A diagnosis made more than fifteen years ago (38) has proved more correct than could have been hoped for: the last decade has shown that the time is ripe in psychology for scientific research on a much more theoretical level.

Now, however, it seems necessary to point to certain dangers of theorizing. Enthusiasm for Theory? Yes! Psychology can use much of it. However, we will produce but an empty formalism, if we forget that mathematization and formalization should be done only to the degree that the maturity of the material under investigation permits at a given time.

Philosophically, there seems to exist only an "either-or": if scientific "facts" and particularly all so-called dynamic facts are not merely "given data," but inseparably interwoven with theoretical assumptions, there seems to be no choice other than to base every statement in psychology on theoretical assumptions.

For the psychologist, as an empirical scientist, the situation looks rather different. He finds himself in the midst of a rich and vast land full of strange happenings: there are men killing themselves; a child playing; a child forming his lips trying to say his first word; a person who having fallen in love and being caught in an unhappy situation is not willing or not able to find a way out; there is the mystical state called hypnosis, where the will of one person seems to govern another person; there is the reaching out for higher, and more difficult goals; loyalty to a group; dreaming; planning; exploring the world; and so on without end. It is an immense continent full of fascination and power and full of stretches of land where no one ever has set foot.

Psychology is out to conquer this continent, to find out where its treasures are hidden, to investigate its danger spots, to master its vast forces, and to utilize its energies.

How can one reach this goal? At first, in what might be called the "speculative epoch," the attempt was made to dig down deep into the ground. A peculiar something was reported to lie under ground as the hidden source of energy. One gave it the name "association." New investigators drove their shafts down at somewhat different places. They found something different which they called "instinct." A third group of explorers reported a different entity, "libido." And all claimed to have found *the* foundation on which the land rested. By this time, psychologists had become rather

tired of the various claims. It had become clear that the continent was much larger than was suspected at first. Perhaps there was more than one source of energy. The whole depth-sounding process had become rather open to suspicion, particularly since no explorer seemed able to bring his material up to the surface for inspection in broad daylight. How was one ever to prove a real connection between the entities supposedly existing underground and what was going on at the surface? There, open to all eyes, and unquestionable, interesting phenomena presented themselves. The psychologist now turned to extensive travelling over the surface of the continent, eager to find new phenomena, to describe them exactly, to count and to measure them, to register their growth.

This procedure, however, did not prove altogether satisfactory either. After all, what the psychologist observed were human beings. Children needed help and education: delinquent people needed guidance: people in distress wanted cure. Counting, measuring and classifying their sorrows did not help matters much. Obviously one had to go to the facts "behind," "below the surface." How to accomplish this without the fallacies of the speculative epoch? That is the dominant methodological question of psychology today, at the beginning of its "Galilean period."

The answer is something like this: to make oneself master of the forces of this vast scientific continent one has to fulfill a rather peculiar task. The ultimate goal is to establish a network of highways and superhighways, so that any important point may be linked easily with any other. This network of highways will have to be adapted to the natural topography of the country and will thus itself be a mirror of its structure and of the position of its resources.

The construction of the highway system will have to be based partly upon assumptions which could not be expected to be fully correct. The test drilling in exploring the deposits would not always lead to reliable results. Besides, there is a peculiar paradox in the conquering of a new continent, and even more so in that of a new scientific field. To make the proper tests, some machinery has to be transported, and such transportation presupposes more or less the same road, the construction of which is contingent upon the outcome of the test. In other words, to find out what one would like to know one should, in some way or other, already know it.

What should science do to resolve this paradox? If it is wise,

it follows the same procedure used in a systematic exploration of the resources of a new land: small paths are pushed out through the unknown: with simple and primitive instruments measurements are made: much is left to assumption and to lucky intuition. Slowly certain paths are widened: guess and luck are gradually replaced by experience and systematic exploration with more elaborate instruments. Finally highways are built over which the streamlined vehicles of a highly mechanized logic, fast and efficient, can reach every important point on fixed tracks.

By and large, the actual development of a science seems to follow this general pattern. Yet frequently somebody, thinking he knows where an important treasure lies, tries to build a superhighway straight to this point without regard for the natural structure of the country. Much enthusiasm and work is put into such roadbuilding, but after some time it becomes apparent that this superhighway is a dead end leading nowhere.

Formalization and mathematization in psychology, if prematurely done, may lead us to the building of such logical superhighways. Formalization will have to be achieved if psychology is to become an acceptable science, and psychology can and must take definite steps in that direction now. However, the promising beginning and the growing interest for such undertaking will soon turn into disappointment, if certain dangers, arising partly from recent trends in philosophy and logic, are not frankly discussed and avoided.

I feel somewhat obliged to take this matter up, because *Principles of Topological Psychology* (45) and *The Conceptual Representation and the Measurement of Psychological Forces* (47) deal mainly with the conceptual tools of psychology. Some of the critics, who did not realize that these conceptual tools have been used for more than a decade in a great number of investigations in a variety of fields, seem to have concluded that my main interest in psychology is formalization or mathematization. Nothing can be more erroneous. As psychologists we are interested in finding new knowledge about, and deeper insight into, psychological processes. That is, and always has been, the guiding principle. Theory, mathematization and formalization are tools for this purpose. Their value for psychology exists only in so far as they serve as a means to fruitful progress in its subject matter, and they should be applied, as complex tools always should, only when and where they help and do not hinder progress.

II

Some psychologists interested in "strict logical derivations" have criticised our experimental work for not being written in the form: (a) definition, (b) assumption, (c) conclusion. On the other hand French (23) writes: "In the course of fifty years (Psychoanalysis) has developed an extensive system of scientific concepts but the concepts have grown step by step as a necessary and inevitable product of Freud's attempt to orient himself in a bewildering chaos of psychological facts that no one previously has been able to understand. Due to close contact of these new concepts with the facts, one set of concepts was devised to explain one set of facts and a new problem would give rise to an entirely new set of concepts . . . Topological psychology on the other hand starts with a selfconsistent mathematical discipline and then goes to look for facts to fit it." (p. 127)

As an answer I may be permitted to survey the actual historical development. My work in psychology began with experiments on association and the *determinierende Tendenz* (35, 36). The intention was not to criticize associationism but rather to refine the measurement of the "strength of the will" as developed by Ach (66). His work at that time, I believe, was the most precise theoretically in the field of will and association. After three years of experimentation with hundreds of series of nonsense syllables, and after thousands of measurements of reaction times (at that time one had to measure in 1/1000 seconds) I became convinced that there was no point in trying to improve the exactness of this measurement. The attempts were all based on the assumption of the classical law of association as stated, e. g., by G. E. Müller. The experiments however seemed to prove conclusively, contrary to my expectation, that this assumption had to be abandoned or decidedly modified. It was necessary to distinguish two rather different types of habits (associations): "need habits" (like alcoholism) and "execution habits" (like pulling a lever up rather than down). The first type represents a "tension" (source of energy), a need such as hunger, which demands satisfaction either directly or through substitution. The execution habit, on the other hand, is in itself no source of action. It is equivalent to a pattern of restraining forces determining a certain path. Without a need or quasi-need the execution habit does not lead to action.

After an interruption due to the first World War, a systematic attempt was made to test the positive assumption growing out of

this criticism of the law of association. The first step was an attempt to achieve a more precise conceptual analysis. Dynamically, an "association" is something like a link in a chain, i. e., a pattern of restraining forces without intrinsic tendency to create a change. On the other hand, the tendency to bring about action is basic to a need. This property of a need or quasi-need can be represented by co-ordinating it to a "system in tension." By taking this construct seriously and using certain operational definitions, particularly by correlating the "release of tension" to a "satisfaction of the need" (or the "reaching of the goal") and the "setting up of tension" to an "intention" or to a "need in a state of hunger," a great number of testable conclusions were made possible.

After these basic conclusions had been proved valid, mainly through the experiments of Zeigarnik (37e) and Ovsiankina (37f), the theory was expanded to include problems like psychological satiation, substitution on the reality and irreality level and in play situations, the measurement of substitute value, the level of aspiration, its shift after success and failure, the effect of distance from the goal upon the strength of psychological forces; in short, the pattern of goals and needs, their interrelation, and the ways of satisfying them, were studied. Today, a multitude of problems including personality and personality development, cognitive structure, social and cultural relations are being attacked with a set of related concepts.

If one looks through our publications in the order that they have been published during the last decade one will, I think, agree that the various theoretical assumptions and constructs have been developed rather slowly step by step. The assumptions were made rather tentatively at first and with a fair amount of hesitation. Only to the degree that more and more empirical facts could be brought together experimentally, the theory gained in firmness and more specific statements emerged.

This gradual elaboration based on empirical facts and a great variety of experiments holds true particularly for the mathematical aspect of the theory. The application of topological and vector concepts was first made in a way which left it open whether we had to deal merely with a pedagogical device or rather with a real scientific representation. Only to the extent that these conceptual tools proved to be valuable in formulating problems, and permitting derivations which could be tested experimentally did they become essential parts of the theory and of its dynamic constructs.

French's (23) criticisms of the *Principles of Topological Psychology* overlooks the fact that this first attempt at a systematic survey of the conceptual tools used in our research was not made till after many years of empirical work with them. What French says about the gradual growth of psychoanalytic concepts out of psychological facts can as well be said in regard to the use of topological and vector concepts in field theory. As a matter of fact, the feeling for the necessity of rather slow and careful theorization was the main reason which restrained us from using strict, so-called formalistic, derivations in those early experimental studies. That does not mean that I considered those derivations to be not fully stringent or that I did not esteem the value of a mathematical logical language which I had found very helpful when treating problems of comparative theory of science (74). However, it would have been premature to present certain ideas "more geometrico," i. e., by setting forth so-called formal definitions, assumptions and deductions without being able to do so in well-defined mathematical symbols, in the form of equations or similar representations of functional dependence. If one uses terms of everyday language such as "frustration," "need," "learning" without being able to co-ordinate mathematical entities to them, one might as well use the normal form of reasoning. To present statements employing amathematical constructs "more geometrico" suggests a degree of exactness of derivation which, I am afraid, can not generally be reached with those types of constructs. This holds true even when these conceptually rather vague constructs are operationally well defined. We will come back to this point later.

One can go even one step further. The dynamic constructs used for example in the study of Zeigarnik may be said to be already of that type which readily lends itself to a strict mathematical representation. However, we felt that it would be wiser to wait with the formalistic representation until these constructs would have proved more thoroughly to be empirically fruitful. Like French, I feel very strongly the necessity of keeping theories sufficiently plastic in earlier stages of a study. A too high degree of formalization is likely to endanger this plasticity.

In regard to the emphasis on empirical foundations and the closeness to facts, topological psychology can certainly not be considered the more speculative approach. The difference between it and psychoanalysis lies rather in (10, 16):

1. A new, higher level of aspiration of the first in regard to the conceptual side of the psychological constructs.

2. A greater readiness to face the logical consequences of a theory without explaining nonfitting cases as exceptions, or by resorting to a suitable combination of counteracting assumptions so that practically no event which might disprove the theory can be envisioned. Field theory recognizes only such theories to be of any positive value for which the possibility of disproving exists in principle. One should not be permitted to use in one part of psychology one type of concept and an "entirely new set of concepts" (French) in regard to a second group of psychological facts. Freud doubtless was very successful in changing the attitude of psychopathology in the direction of determinism. However, his own method does not go the whole way. That is particularly apparent in Freud's recently repeated (68) advice to the psychoanalysts: one should be satisfied to find one explanation for each case and should not be disturbed if in a second case, in spite of the same conditions, different behavior results. Determinism (lawfulness) as presupposed by field theory means that the same conditions always lead to the same effects: therefore, a theory has to be changed whenever different effects result from conditions which have to be called the "same" from the point of view of this theory. Freud's famous principle of "over-determinism" of psychological processes is actually a principle of incomplete determinism. His unsympathetic attitude toward experiments is but another symptom of this point of view.

3. Stricter requirements in regard to the empirical proof of a theory. On the whole, only experimental proof is accepted.

4. More attention given to the fundamental differences between historical and ahistorical questions.

Thus, topological and vector psychology, although firmly based on empirical data, nevertheless holds strongly that psychology has to take a decisive step in the direction of stricter conceptualization.

Psychology cannot try to explain everything with a single construct, such as association, instinct, or gestalt. A variety of constructs has to be used. These should be interrelated, however, in a logically precise manner. Moreover, every theoretical statement brought forth to explain certain empirical data should be carefully examined not only in the light of these data but in the light of the totality of empirical data and theoretical statements of psychology. In other words *ad hoc* theories should be avoided. Bringing to-

gether the total field of psychology and doing that in a logically consistent manner might well be viewed as one of the basic purposes of our approach. The demand for a new level of precision in regard to the conceptual properties of the constructs, with a view to an ultimate strictly mathematical representation, is but a means to this end. On the other hand, it has been realized that without such mathematization the development of a consistent scientific psychology is impossible in the long run.

III

Occasionally criticisms have been made that the number of subjects in some of our experiments was not sufficiently large. It is probable that, in one or the other experiment, a greater number of cases would have added to the reliability; and, of course, additional confirmation is always desirable. But, where other investigators have repeated our experiments in a competent manner, our results have stood up very well on the whole. Besides, different types of confirmation are most desirable for different types of questions. For instance, if one wishes to find out how the frequency of resumption depends upon the point at which an activity has been interrupted one will have to use a relatively great number of cases to get reliable results, for the problem involved is how within one situation a gradual quantitative change of one factor changes another factor quantitatively. In such cases the problem of the exactness of measurement is paramount and therefore a great number of cases is important.

Take, on the other hand, such questions as whether the effect of an intention is that of a link (association) or the creation of a quasi-need (equivalent to a tension system). If the latter theory is correct, one should expect, e. g., a fair number of resumptions after interruption. The study of about one hundred interruptions by Ovsiankina (37f) shows indeed 80 per cent of resumptions. There is some merit in trying another group of one hundred interruptions. If however, this group again shows about 80 per cent of resumption, one can follow two lines. Either one tries to determine the actual percentage of resumption as accurately as possible, or one is mainly interested in the question whether the effect of an intention can be adequately understood as the creation of a tension system. For the latter question it is at present of minor importance whether the percentage of resumption is 75, 80, or 85 per cent, because any of these figures would be in line with the general as-

sumption. To prove or disprove the theory of tension systems, it seems much more important to find a variety of derivations from this theory which should be as different as possible from each other, and to test as many as possible of these derivations, even if this test should be rather crude quantitatively, at the beginning.

IV

It might be well to illustrate this point by reviewing in detail the first experimental study of the above mentioned series, viz., the experiments of Zeigarnik (37c) about the recall of finished and unfinished actions which were carried out in the years 1924 to 1926. Let us repeat some of Zeigarnik's derivations and argumentations step by step making use, however, of the formal apparatus of symbols and equations which has been developed in the meantime (47).

THE BASIC ASSUMPTIONS AND THE MAIN DERIVATION

The critical experiments about association and "the measurement of will power" mentioned above had suggested the theory that the effect of an intention was equivalent to the creation of an innerpersonal tension. The purpose of Zeigarnik's experiment was to provide a first experimental test of this theory. The theory contains two basic assumptions.

(A1) *Assumption 1:* The intention to reach a certain goal G (to carry out an action leading to G) corresponds to a tension (t) of a certain system (S^G) within the person so that $t(S^G) > 0$. This assumption co-ordinates a dynamical construct (system in tension) to the observable syndrome popularly called "intention."

(A2) *Assumption 2:* The tension $t(S^G)$ is released if the goal G is reached.

$$t(S^G) = 0 \quad \text{if } P \subset G$$

Zeigarnik (37c) uses as a symptom for the existence of the tension the tendency to recall activities corresponding to the system in tension. The expectation of the existence of such a system is based on the following:

(A3) *Assumption 3:* To a need for G corresponds a force $f_{P,G}$ acting upon the person and causing a tendency of locomotion toward G.

$$\text{if} \quad t(S^G) > 0 \quad f_{P,G} > 0$$

This assumption determines the relation between need and locomotion. In other words it means a construct of tension in the person and the construct of force for locomotion in the environment. (For the definition of force, see (47).)

Assumptions (A1), (A2) and (A3) are rather general in nature and have been used as basic assumptions for a great variety of deductions and experimentation. (It may be possible to eliminate (A3) to a certain degree and to replace it by a combination of (A1) and (A2). One could say without formally introducing the construct of force for locomotion that in case $t(S^G) > 0$ there should result according to (A2) a tendency to change the life space so that $t(S^G) = 0$. We prefer, however, to state (A3) as a separate assumption.)

(A3a) *Assumption 3a:* A need leads not only to a tendency of actual locomoting towards the goal region but also to thinking about this type of activity, in other words the force $f_{P,L}$ exists not only on the level of doing (reality) but also on the level of thinking (irreality):

$$\text{if } t(S^G) > 0 \qquad f_{P,R} > 0$$

where R means recall.

This last assumption of Zeigarnik is more specific in character. It can be viewed as a specialization of (A3). For the derivations of Zeigarnik this specific form (A3a) rather than (A3) is needed.

From the three assumptions (A1), (A2) and (A3a) follows:

(D1) *Derivation 1:* The tendency to recall interrupted activities should be greater than the tendency to recall finished ones. This derivation can be made as follows. We indicate the completed task by C, the unfinished one by U and the corresponding systems by S^C and S^U respectively. We can then state

(a) $t(S^U) > 0$ according to (A1)
(b) $t(S^C) = 0$ according to (A2)
Hence (c) $f_{P,U} > f_{P,C}$ according to (A3a), on the level of thinking. In other words: there is a greater tendency to recall spontaneously unfinished tasks than finished tasks.

Experimental Proof: The first objective of Zeigarnik (p. 9, 18) was to test experimentally this conclusion and it was found to be correct, the quotient $\frac{\text{recalled unfinished tasks} = RU}{\text{recalled completed tasks} = RC}$ being 1.9 approximately. Experiments where certain tasks were first interrupted but later on allowed to be finished served to prove that it is not the experiences connected with the interruption itself which are the cause of this result but the reaching or not reaching of the goal. In this experiment the reproduction was not more frequent than in the case of tasks completed without interruption.

After this main conclusion has been found to be true two procedures are open. One can feel that one has done enough for the proof of the main assumption and can go into more exact quantitative measurements, or one can try to find new independent deri-

vations from the basic assumptions and to test these experimentally with the purpose of corroborating them. Zeigarnik embarked mainly upon the second alternative.

FIELD THEORETICAL IMPLICATIONS OF THE CONSTRUCT "TENSION"

Using the construct of a "system in tension" for representing psychological needs definitely presupposes a field theory. Conceptually, tension refers to the state of one system relative to the state of surrounding systems. The essence and the purpose of this construct is to include a tendency for change in the direction of equalization of the state of neighboring systems. The construct, therefore, presupposes a geometric representation of the person and a distinction of functional subparts, or "systems" within the person, with a definite position in regard to each other. This is but an elaboration of the conceptual properties already implied in the construct tension. Formalistically, one can express the basic relation between neighboring tension systems in the following way:

(C1) If $t(S^1) \neq t(S^2)$ and $b_{S_1} \cdot b_{S_2} \neq 0$, a tendency exists to change so that $t(S^1) = t(S^2)$. In this formula b_{S_1} and b_{S_2} indicate the boundaries of the systems S^1 and S^2, $b_{S_1} \cdot b_{S_2}$ their common part.

The construct tension furthermore presupposes definite assumptions as to the dynamic character of this field, e. g., if the systems corresponding to different needs or quasi needs should be able to keep different amounts of tension during a certain period, one will have to assume that this field is not too fluid. If it should be a very fluid medium, any differences between the tension levels of the various systems would be bound to disappear in a very short time because of the fact that the tendency of equalization resulting from the local tensions would not meet any resistance; in other words, if a quasi need is co-ordinated to a tension system which may show its effect even over a considerable time interval, one has to assume that dynamically the person cannot be considered as entirely fluid. On the other hand, a person can not be regarded as an entirely rigid medium. Otherwise, the effect which one need has on other needs and on the tension level of the person as a whole, could not be accounted for. A person, therefore, has to be conceived of as of a medium degree of fluidity in regard to the intercommunication of his tension systems. It is clear that this degree of fluidity may vary from person to person and from situation to situation for a single person. Assuming the constancy of the structural relations of a given set of systems (and assuming a temporarily imperme-

able boundary surrounding the set as a whole), one can express this statement in the following way:

(C2) Let us indicate the absolute difference between the tension $t(S^1)$ and the tension $t(S^2)$ of two neighboring systems S^1 and S^2 at the time the tensions are being built up by $|t(S^1) - t(S^2)|^0$, the time since then elapsed by Ti, the tension difference at this time by $|t(S^1) - t(S^2)|^{Ti}$, and the fluidity by fl, then we can state

$$|t(S^1) - t(S^2)|^0 - |t(S^1) - t(S^2)|^{Ti} = F(Ti, fl)$$

where F symbolizes a monotonously increasing function.

That means: the change in the tension difference of neighboring systems depends upon the time interval and the fluidity. Of course, that holds true only if the tensions of these systems are not changed by other factors such as, e. g., release of tension by reaching the goal.

As far as I can see, (C1) and (C2) are necessary conceptual elements of the construct tension. The co-ordination of needs and quasi-needs to this construct tension, therefore, makes it possible to derive a number of facts which may seem rather remote from the problem primarily investigated. These predictions could hardly be made without this specific dynamic theory, and therefore if they can be proved they are of particular value for the confirmation of the theory.

DERIVATIONS IN REGARD TO THE FLUIDITY OF THE FIELD AND THE COMMUNICATION BETWEEN TENSION SYSTEMS

(D2) The difference in tension between systems corresponding to unfinished and finished tasks decreases with the time interval elapsed since the creation of the tension system.

Derivation: Follows immediately from the right side of the equation (C2) by means of (A1) and (A3a).

Experimental Proof: The Zeigarnik quotient (ZQu.) decreases from about 1,9 to about 1,2 if the recall test has been postponed one day (p. 72).

If we are correct in assuming that the maintenance of a tension difference between the partial systems of an individual depends upon a sufficient rigidity of the medium, a quicker decrease of tension could occur if the person is more fluid. To prove this conclusion experimentally, Zeigarnik had to find a state which could reasonably be characterized as increased fluidity (fl). The general symptoms of fatigue seem to justify

(A1 *Assumption 1:* fl (P tired) > fl (P nontired).

(D3) The Zeigarnik quotient $\frac{RU}{RG}$ is smaller for tired than for nontired subjects.

Derivation: It follows immediately from the denominator in (G2) by means of (A1), (A3a) and (A4).

Experimental Proof: Subjects who were tired during performance and recall yielded a quotient of .7; those tired during performance but not during recall a quotient of .6; those not tired during performance but tired during recall 1.0 (p. 66 67). This threefold variation was made because a fluid state of a person might prevent the building up of any considerable tension difference. The last variation shows that even if the tension has been built up in a nontired state, the quotient becomes smaller if the subject is tired during recall. [The problem of the quotient being smaller than 1 is accounted for by factors not discussed in this paper; they are discussed by Zeigarnik (37c).]

Brown (10) too refers to the relation between diffuse discharge and the fluidity of the medium (G2). Several experimental data and other observations suggest that the levels of greater irreality (levels of wishes and dreams) have to be considered as more fluid than the level of reality (level of action). From this it would follow that needs and quasi-needs related to these more irreal levels should show a quicker diffused discharge of tension.

(A5) *Assumption 5:* fl F (degree of irreality)

(D4) The rate of decrease of the Zeigarnik quotient within a given time interval, increases with the degree of irreality of activities involved.

$$\left(\frac{RU}{RC}\right)^{\circ} \qquad \left(\frac{RU}{RC}\right)^{\prime} \qquad F \text{ (degree of irreality)}$$

Derivation: (D4) follows immediately from (G2) in connection with (A1), (A3a) and (A5).

Experimental Proof: Brown (37n, p. 1 26) has shown that the ability to recall interrupted "irreal" activities decreases faster than the recall of the more "real" ones. (It is possible that the experiment of Brown does not deal with differences in the degree of reality but rather with differences between more peripheral activities as against more central ones on approximately the same level of reality. In this case his experiment would show that the more peripheral region of a person has to be regarded as more fluid.)

One way to destroy the differences of tension in the various systems of the inner personal region seems to be the creation of a high emotional tension or, more specifically, a quick shift up and down of strong emotional tension. The bringing up of the general emotional tension within a person to a magnitude of a different order than that corresponding to the relatively weak quasi needs created in these experiments would, one might expect, equalize these tensions or at least make their differences practically negligible. A sudden change up and down of such a magnitude might well destroy quite a number of walls between the systems or bring about another process equivalent to total dedifferentiation and equaliza-

the tensions in this way. As the constructs of "permeability" and "elasticity" are not elaborate enough at present to warrant a formalistic representation we prefer to give this statement in verbal form:

(A6) *Assumption 6:* Strong waves of emotional tension destroy tension differences corresponding to relatively superficial needs.

(D5) The Zeigarnik quotient $\frac{RU}{RC}$ after an emotional excitement and "let down" is smaller than without such a process intervening between performance and recall.

Derivation: It follows from (A6), (A1) and (A3a).

Experimental Proof: After experimentally created emotional waves the Zeigarnik quotient decreases to .6 (37e, p. 75). A similarly low quotient .75 (p. 70) is shown by those subjects who have been emotionally excited during the experiments as a result of their general life situation.

As a last example in this group of derivations which are based mainly on the spatial relations between the various systems and on their amount of communication, we mention the following: A condition for a difference between the systems corresponding to finished and unfinished tasks is that the systems corresponding to each individual task in the experiment are set up from the beginning as sufficiently separated within the person. For if these various systems are subparts of one comprehensive unit without much separation no great difference in tension can persist. In this case there may be differences in the tension levels of those greater units but no differences between the various subsystems within the larger units. That sufficiently strong boundaries between the systems are a prerequisite for the persistence of tension is already contained in (C1) and (C2).

(D6) The Zeigarnik quotient $\frac{RU}{RC}$ should be about 1 if S^n and S^i are not sufficiently separated.

Derivation: Follows directly from (C1) and (C2) in connection with (A1) and (A3a).

Experimental Proof: A larger unit in which the single tasks, no matter whether finished or unfinished, are not much separated, can be created by the setting up of a cognitive structure at the beginning of the experiment, according to which the single tasks appear as parts of a more highly unified series. In such settings the quotient was found to be about .97 (p. 64).

DERIVATION IN REGARD TO INTENSITY OF QUASI-NEEDS

One can elaborate our basic assumption (A1) about the relation between psychological needs and tension systems by correlating the intensity of the tension to the intensity of the need.

(A1a) *Assumption (A1a):* $t(S^G) = F(n^G)$ where n^G means the intensity of the need correlated to the goal G.

Correspondingly, we can elaborate the basic assumption (A3) and (A3a) concerning the relation between tension and force for locomotion and recall into a quantitative relation.

(A3b) *Assumption (3b):* $|f_{P,G}| = F(t(S^G))$ where $f_{P,G}$ means the strength of the force in the direction of locomotion or recall.

(D7). $$\frac{RU}{RG} = F(n^a)$$

Derivation: (D7) follows from (A1a), (A3a) and (A3b).

Experimental Proof: It is to be expected that subjects who are particularly ambitious will show quasi needs of a greater intensity than the average subject, whereas subjects whose involvement in the activities is particularly weak should have particularly weak quasi needs. Zeigarnik has grouped separately those subjects who according to their general behavior in the experiment could be characterized as "ambitious" (without regard to the Zeigarnik quotient, (p. 59). She found that their quotient showed a value of 2.75 as against 1.9 for the average kind of subject. On the other hand, a group of subjects who merely did "what the experimenter told them," without getting personally involved show a quotient of 1.03, much less than the average (p. 63). According to Zeigarnik the most seriously involved group of subjects were children. Indeed, their quotient shows a value of 2.5 (p. 61). It may be that there are other factors which contribute to this result. Marrow (55) has attacked the problem of the relation between the intensity of the need and the Zeigarnik quotient in a particularly careful way. He compares the control group of subjects with another group in a situation of competition. He still further sharpens this competition either by praise or by blame. Although he uses a different type of activity the Zeigarnik quotient of the control group was again 1.9, whereas in the situation of competition, where the need of the subject is very much intensified, the Zeigarnik quotient went up decidedly, in the case of encouragement to 2.17 (p. 49), in the case of blame to 2.10 (p. 57). Marrow showed that the Zeigarnik quotient was particularly high for those tasks which directly followed after the experience of praise or blame by the experimenter.

DERIVATIONS IN REGARD TO PSYCHOLOGICAL AS AGAINST NON-PSYCHOLOGICAL CHARACTERIZATION OF TASKS

It is a general presupposition of psychological field theory that one has to be careful to use psychological rather than "objective" sociological or physical categories. There are cases where an activity might be finished from the subject's point of view although it might be classified as interrupted by the experimenter. On the other hand, there are outwardly finished activities which psychologically are unfinished for the subject (37c, p. 40-44).

According to (A2) the release of tension is co-ordinated to the reaching of the goal and this reaching of the goal has to be understood psychologically. From this follows:

(D8). $\frac{RU}{RC}$ 1 if P $\subset$ G at the time of "interruption."

Derivation: This follows directly from (A2) in connection with (A1) and (A3a).

Experimental Proof: Zeigarnik (p. 46-48) reports a number of specific cases of outwardly unfinished, psychologically finished activities where the quotient is about 1. Marrow has used a special experimental set-up where the subject was told that the experimenter is merely interested in finding out whether or not the subject is able to carry out the task and that he would interrupt as soon as he had received this impression. Thus, the interrupted task here psychologically appears finished. Marrow found indeed that the Zeigarnik quotient in this case was close to 1, viz., .74 (p. 42).

We might mention here the difference between continuous and end tasks. The end tasks such as making a chair out of plasticine or writing a poem have a rather well-defined end, so that in the case of interruption the subject has definitely not reached the goal, whereas by finishing he has reached it. In this case the Zeigarnik quotient is decidedly greater than 1, viz., 1.8. In the case of a continuous task, however, such as putting beads on a string, the subject does not reach a definite goal after "finishing" nor does he definitely get outside the goal region if "interrupted." Therefore the tension in those cases should not be very much different. Indeed, the Zeigarnik quotient is 1.1 (p. 52). (The low values of both R_u and R_e found by Zeigarnik show that the continuous task, no matter whether outwardly interrupted or finished, is psychologically finished.)

(D9). $\frac{RU}{RC} = 1$ if P $\subset\!\!\!=$ G at the time of "finishing."

Derivation: In this case a tension $t_{PG} > 0$ remains both in the systems S^u and S^e because none of the tasks is psychologically finished. (D9) follows directly from (A2) in connection with (A1) and (A3a).

Experimental Proof: In case of interesting tasks the Zeigarnik quotient was found to be equal to 1 (p. 45). In case of an interesting task, there is still a need to go back to this type of activity even if the special example has been solved.

DERIVATION IN REGARD TO ADDITIONAL FIELD FORCES

According to the general field theory the actual behavior is related to the resulting force acting on the person at that time. It is therefore always important to know which other forces might in-

SUMMARY OF SOME OF ZEIGARNIK'S CONSTRUCTS, ASSUMPTIONS, DERIVATIONS AND THEIR VERIFICATION

Constructs					
Term	*Operational Definition*	*Conceptual Properties (C)*	*(Basic Theorems) Assumptions (A)*	*Derived Theorems (D)*	*Verification*
Psychological tension (t)	Empirical syndrome indicating a "need"	Tendency of spreading to neighboring systems (C 1)	Relation between intention and need (tension) (A 1), (A 1a), (2)	Zeigarnik quotient $= \frac{RU}{RC} > 1$ (D 1) from (A 1), (A 2), A 3a)	Predicted
				Decrease of Zeigarnik quotient with time elapsed since creation of need (D 2) from (A 1), (A 3a), (C 2)	Predicted
Psychological force (f)	Psychological locomotion	Vector (C 3)	Relation between tension and force: $f_{P,G} = F(t(S^G))$ (A 3), (A 3b)		
			Relation between tension and force on the level of thinking (tendency to recall): $f_{P,R} = F(t(S^G))$ (A 3a)	Zeigarnik quotient smaller for tired subjects (D 3) from (A 1), (A 3a), (A 4), (C 2)	Predicted
Fluidity (fl)		Factor determining the velocity of equalization of tension with neighboring systems (C 2)	Fluidity as a function of tiredness (A 4)	Zeigarnik quotient smaller for more peripheral systems (D 4) from (A 1), (A 3a), (A 5), (C 2)	Predicted by J. F. Brown
			Fluidity as a function of degree of irreality (inverse centrality) (A 5)	Zeigarnik quotient = 1, if the systems corresponding to finished and unfinished tasks are not separated (D 6) from (C 1), (C 2), (A 1), (A 3a)	Explained

Leveling of tensions in different systems by emotional waves (A 6)	Decrease of Zeigarnik quotient after emotional shake-up (D 5) from (A 1), (A 3a), (A 6)	Predicted
	Zeigarnik quotient increases with intensity of need (D 7) from (A 1a), (A 3b)	Explained; predicted by A. Marrow
	Zeigarnik quotient = 1, if "unfinished" task is psychologically finished (D 8) from (A 1), (A 3a)	Explained; predicted by A. Marrow
	Zeigarnik quotient < 1, if "finished" task is psychologically unfinished (D 9) from (A 1), (A 3a)	Explained
	Zeigarnik quotient decreased with added tendency created by instruction to recall in definite order (D 10) from (A 1), (A 2), (A 3a)	

fluence behavior aside from those specifically established in the experiment. In Zeigarnik's experiments the forces in the direction of recall are due to two sources: the instruction to recall given by the experimenter sets up a quasi-need, and the corresponding tension $t(S^R)$ and force $if_{P,R}$. (The symbol *if* designates an "induced" force rather than a force corresponding to one's "own" need.) This is but a further application of (A1) and (A3) in regard to the activity of recalling. In addition, there is a force in the direction of spontaneous recall $f_{P,R}$ due to the tension $t(S^n)$ corresponding to the interrupted task according to (A3a).

The recall of a finished task is therefore due to the force $if_{P,R}$ whereas the recall of the unfinished task is due to $if_{P,R} + f_{P,R}$.

From this follows:

(D10). The more the recall loses its spontaneity and becomes the result of the experimenter's instruction, the more the Zeigarnik quotient approaches 1

$$\frac{RU}{RC} \rightarrow 1$$

Derivation: One can assume that on the average

$$if_{P\,EF'} = if_{P,EC}$$

From (A1), (A3) and (A3a) it follows that

$$f_{P\,EF'} > 0; \quad f_{P\,EC} = 0$$

Although we don't know the general laws governing the addition of forces, it seems safe to deduce from these relations, that

$$if_{P\,EF'} + f_{P\,EF'} > if_{P\,EC} + f_{P\,EC}$$

Hence we can write

$$\frac{RU}{RC} = F\left(\frac{if_{P,EF'} + f_{P,EC}}{if_{P,EC} + f_{P\,EC}}\right)$$

and this fraction converges towards 1, if the spontaneous forces remain constant and the induced forces are increased.

Experimental Proof: Zeigarnik (p. 37-38) found that the quotient of those subjects who experienced the experiment as a memory test and therefore had a relatively high $if_{P\,E}$ shows a quotient 1.5 (as against the average of the whole group at 1.9) whereas those subjects who performed the recall in a spontaneous mood of "telling about" have the very high quotient of 2.8.

V

Psychologists agree that the value of constructs and theories in an empirical science depends in the last analysis on their fruitfulness in "explaining" known facts and predicting unknown ones. Not infrequently it has been stated that theories which merely explain known facts are of no particular value. I cannot agree

with this view. Particularly in case the theory combines into one logical system known facts which previously had to be treated by separate theories; such a theory would have a definite advantage as an organizational device. Besides, agreement with the known facts proves the adequacy of this theory at least to a certain degree. It is true, however, that it is a clearer test of the adequacy of the theory if one can make predictions from it and prove these predictions experimentally. The reason for this difference, which is not a principal one, seems to be that empirical data generally allow for quite a range of different interpretations and classifications and that therefore it is usually easy to invent a variety of theories covering them.

The table (p. 26) indicates that most of the proofs used in the study of Zeigarnik have had the character of predicting unknown facts. These facts are generally not of a nature which one would have expected from everyday experience. As a matter of fact, at the time the experiments were carried out one would have had to predict the opposite results for the main experiment according to the laws of association and emotion accepted at that time. And these predictions are the more significant as they deal with a wide range of psychological data: they link problems of memory with problems of fatigue; with momentary emotional states; with attitudes such as ambition, which are generally considered to belong to the field of personality; with perceptual structurization (seeing the tasks separately or as one series); with problems of development and personality constancy. In which single experimental study do a few constructs and theorems allow for a greater manifold of experimentally testable predictions in different fields of psychology? Zeigarnik's study, to my mind, sufficiently demonstrated the fruitfulness of constructs and theories to warrant continued investigation. There have since been a great number of studies about satiation, level of aspiration, success and failure, substitution, habits, emotion, environmental structure and forces, social powerfields, social pressure, feeble-mindedness, development and regression, which have been based on this field theoretical approach. They have been carried out partly by my co-workers, but to a considerable extent by independent investigators (see Bibliography). They have confirmed and elaborated these results and thus indirectly shown the value of the constructs used. Nearly all of this experimentation was quantitative in character in the sense this is used in psychology today. Of course, difficulties have arisen, and more

serious difficulties may still arise later. Until now, however, the contradictions have been minor ones and generally could be clarified quite simply. To hold that all these results could have been predicted without these constructs and theorems might be logically possible; actually, it was these constructs which first led to the predictions. Besides, to my knowledge, there is not yet any other theory formulated which actually would account for the totality of these results.

However, the attempt to develop a field theory on the basis of mathematically defined constructs and theorems is very much in the beginning. Thus, in spite of what seems to be an astonishingly wide range of consistent applications, one will have to be ready for major changes. It should be the virtue of an empirical theory not to refrain from making definite assumptions which might later turn out to be wrong, as Hull most appropriately points out. That no major change has had to be made until now I mainly attribute to one aspect of our methodological procedure, viz., the method of gradual approximation. We have tried to avoid developing elaborate "models" (45); instead, we have tried to represent the dynamical relations between the psychological facts by mathematical constructs at a sufficient level of generality. Only gradually and hand in hand with experimental work, was the specification of the constructs attempted.

To my mind, such a method of gradual approximation, both in regard to the constructs used and the technical measurement in experiments, is by far the most cautious and "empirical." In this way a minimum of assumption is made. From this point of view, it seems to be particularly inappropriate to criticize the topological and vector concepts as being too simple mathematically.[1]

The mathematician too easily forgets that the problem of mathematics in psychology is one of applied mathematics. It cannot be the task of the psychologist to develop new mathematical propositions, nor to look for particularly complicated mathematical laws. Instead, he will have to be interested in using as simple mathematical tools as possible. The mathematician will have to realize in

[1] An example of disarming simplicity is presented by Householder (28). He thinks one should not call the use of the most basic and simple concepts of topology an application of mathematics in psychology, because even a quarterback in high school could understand them. A case of a "real" application of mathematics to psychology would be the formula of factor analysis, because everybody could see at a glance that they are not understandable to the simple mind.

addition, that to apply a system of mathematical concepts in an empirical field one does not necessarily have to prove directly the adequacy of the basic mathematical axioms of this system one by one. It is as well to prove the fruitfulness of some of the derived propositions of this mathematical system for the representation of the empirical properties of the field in question. If the representation of spatial relations in physics by Euclidean geometry would not have been permitted until its axioms (such as the divisibility *ad infinitum* of any part of the space) were proved one by one to hold also for the physical space, physics could never have used Euclidean geometry. All one can say is this (cf. Einstein (67) and Reichenbach (76)): if one co-ordinates certain physical processes to certain geometrical entities one can make certain physical predictions. Such a fruitfulness of co-ordinating certain physical processes to entities of one rather than of another kind of geometry is all that one can mean by saying that a certain type of geometry holds or does not hold for the physical space. Exactly the same procedure is followed if certain psychological processes (such as social locomotion) are co-ordinated to certain entities of topological or hodological geometry (such as path). There can be no other meaning and no other proof of the applicability of these geometries to psychology than the fruitfulness of predictions based on such co-ordination.

The nonmathematician, on the other hand, has accused us of using highbrow mathematical or physical concepts. In several places it has been explained that using spatial geometrical concepts does not necessarily mean using physical concepts. In regard to logico-mathematical deduction there is no difference in principle between numerical and geometrical concepts. It seems necessary to emphasize two points which should warn us against a too early formalization and may be helpful in describing with greater precision the purpose of mathematization in an empirical science like psychology.

VI

In recent years it has been much emphasized, particularly by Hull and his students, that a psychological theory should be presented in the form of definitions, assumptions, and conclusions. This argumentation should be carried out step by step so that its logical stringency could be easily checked. We, too, have emphasized for quite a while that psychology will have to depend on

strictly logical derivations and that a step in this direction is at present one of the most urgent tasks. Hull has attempted to fulfill this task, as far as I can see, mainly by retaining the traditional concepts of conditioned reflex, by elaborating them and presenting them in the order of definitions, assumptions, and conclusions. An attempt is under way by Woodger and Hull to represent this theory by logistic means (69–72).

One should recognize the value of a presentation of psychological argumentation in the form of such a strict scheme because it might help to discover shortcomings of a less formal reasoning. I feel, however, that we do not deal here with the most essential aspect of the development of psychology towards a science using logical derivations based on well-defined constructs. The terms conditioned reflex, inhibition, excitatory tendency, frustrations, etc., as used in such derivations, are operationally more or less well defined. However, little attempt has been made to clarify the conceptual properties of those constructs. One does not ask whether any of these constructs has mathematically the properties of a vector, or a scalar, or a tensor, whether it is a region in a field, a pattern of regions or a change occurring within a region. No attempt is made to approach what is called in physics the dimension of a construct. In short, the conceptual properties of the constructs, i. e., their logical interdependence as opposed to their empirical interdependence as discovered by experiments, is left entirely vague. An outstanding example is the construct *intelligence* which is very well defined operationally but so poorly defined conceptually that practically no logical derivation seems possible. In the long run, it seems hopeless to approach a satisfactory logical level in psychology and, at the same time, to leave conceptually vague the dynamical constructs which play an outstanding part within the framework of derivation.

The necessary conceptualization of psychology cannot be reached by merely repeating, in a more formalistic manner, the statements of an existing psychological school like that of conditioned reflex or of psychoanalysis. Logical form and content are closely interwoven in any empirical science. Formalization should include the development of constructs every one of which is considered from the start both as a carrier of formal implication and as an adequate representation of empirical data. This implies that the operational and the conceptual definitions are not arbitrarily related but show an internal coherence (e. g., the possibility of co-ordin-

ating operationally psychological force to locomotion and conceptually to a vector is mainly based on their common feature of directedness). It further implies that the various constructs should be built up in such a way as to be parts of one logically consistent and empirically adequate system.

Without the development of such a type of dynamical constructs the mere formalization of the traditional constructs might hamper progress in psychology, in spite of a possible gain in precision. One psychologist believes that association is something real, libido or gestalt but a magic word; another is equally convinced that libido or instinct is something real. Which psychological constructs are accepted and which are repudiated depends mainly upon the system-language in which the individual psychologist has been taught to think. It is clear that the formalization of such a language into an elaborate system is apt to have a freezing effect. Even after conceptually well-defined concepts have been found, it may be well to postpone formalization until their empirical fruitfulness has been well established.

This is the reason why the original presentation of Zeigarnik's derivations and results was not given in a formalistic system. Similar caution is advisable in new psychological fields such as experimental social psychology. The further the conceptual development proceeds in psychology as a whole, the quicker will it be possible to apply formalistic representation even to new fields.

VII

What is accomplished in regard to representing psychological relations by means of topological and vector concepts, and what should be the next objectives? If I would be permitted to express my own feeling about this question, which properly will be answered, of course, only by the future development of psychology, I would stress the following points:

1. The possibilities of a "field theory" in the realm of action, emotion, personality are firmly established. The basic statements of a field theory are that (a) behavior has to be derived from a totality of coexisting facts, (b) these coexisting facts have the character of a "dynamic field" in so far as the state of any part of this field depends on every other part of the field. The proposition (a) includes the statement that we have to deal in psychology, too, with a manifold, the interrelations of which cannot be represented without the concept of space (45, 49). In fact all psychological schools

implicitly agree with this statement by using concepts like approach or withdrawal, social position, and so forth in their descriptions. It is more and more recognized, although there are still some exceptions, that the spatial relations of psychological data cannot be adequately represented by means of the physical space, but have to be treated, at least for the time being as a psychological space. It is everywhere accepted, that this "life space" includes the person and the psychological environment.

In regard to proposition (b) the situation is similar. Even theories originally based on a co-ordination of isolated stimuli to isolated reactions have developed in a direction which brings them at least very close to (b). A good example for this is the theory of Hull, who does not correlate a reaction to a single stimulus such as an optical one, but to a "pattern of stimuli" which includes goal and drive stimuli. In principle it is everywhere accepted, that behavior (B) is a function of the person (P) and the environment (E), B = F (P,E), and that P and E in this formula are interdependent variables.

2. The first prerequisite for a scientific representation of the psychological field is the finding of a geometry adequate to represent the spatial relations of psychological facts. We know from the history of physics that an empirical space might be represented by different geometries: at first physics used Euclidean, more recently Riemannian geometry. It is to be expected that for psychology, too, more than one geometry might be found useful. Today, one will be satisfied to find at least one geometry which permits a mathematical interpretation of terms like approach and withdrawal without being psychologically meaningless. The hodological space (47) is supposed to be such a geometry. The hodological space is a finitely structured space, that is its parts are not infinitely divisible, but are composed of certain units or regions. Direction and distance are defined by "distinguished paths," which can easily be co-ordinated to psychological locomotion. Such a geometry permits an adequate representation of the step by step character of most psychological processes. It permits furthermore an adequate answer to the puzzling necessity to ascribe different psychological directions to locomotions in the same physical direction if the goal of those locomotions is different. This is particularly important for the problem of the roundabout route. The hodological space permits the description of the structural relations within the person as well as in its psychological environment.

For instance, the degree of differentiation of the person, and peripheral and central layers can thus be defined. Hodological space is no less useful for describing the structure of groups and their changes. Its greatest value, however, becomes apparent when we deal with problems of dynamics.

3. During the later part of the last century the development of dynamic concepts in scientific psychology has been governed by the fear of slipping into the "metaphysics of teleology." The idea that not the future but the past has to be considered as the "cause" of behavior was one of the major motives in developing associationism. At that time anything connected with the concept of direction was considered to be a teleological approach. The concept of goal was suspect and had to be replaced by something which does not imply the concept of direction. Other aspects of teleology looked upon with no less suspicion were: "foresight," which permits the avoiding of obstacles, and "consciousness," which takes into account the total setting. Associationism tried hard to avoid these allegedly unscientific elements. It tried to develop a concept of association devoid of the logical element of direction. Association should be "blind" and based entirely on the past (that meant the theory of association must be based on repetition).

Of course, the facts of goals, needs and will were too important simply to be neglected. With psychology under the spell of the dichotomy, "teleology" or "causation by the past," nothing else seemed to be left for those psychologists who were impressed by the importance of goal seeking and directedness than to resort to a definite teleological theory. McDougall (75) is a classical representative of this approach. The associationists, too, could not entirely neglect goal-directed and meaningful behavior. They tried to take goals, intentions, and will into their system, and it is interesting to see how by doing this the character of the associationistic theory was changed. Thorndike's law of effect and Ach's (66) concept of *determinierende Tendenz* ascribe to those types of repetition which are connected with certain aspects of a goal (reaching the goal, or setting up an intention) the creation of particularly strong associations. Hull recognizes the importance of goals and needs by including goal- and need-stimuli as important elements into those "stimulus patterns," which are assumed as the cause of a reaction. More and more, the theory of associationism (conditioned reflex) has been influenced by the attempt to derive directed activities without assuming directed dynamical factors.

According to field theory, behavior depends neither on the past nor on the future but on the present field. (This present field has a certain time-depth. It includes the "psychological past," "psychological present," and "psychological future" which constitute one of the dimensions of the life space existing at a given time.) This is in contrast both to the belief of teleology that the future is the cause of behavior, and that of associationism that the past is the cause of behavior. Furthermore, it is an error to consider the assumption of directed factors as characteristic for teleology. The causal explanations in physics certainly do not avoid such assumptions: the physical force is a directed entity, a vector. Psychology, too, becomes in no way metaphysical by resorting to constructs of vectorial character such as psychological forces. This permits a direct attack on the problems of directed action. In addition, by defining direction in terms of hodological space, an adequate representation is possible of what has been meaningful in some of the other claims of teleology. The puzzling relation between knowledge and dynamics which had a mystical character in teleology is made understandable at least in one fundamental point: it becomes clear why lack of knowledge has the effect of a barrier. The mysterious ability of animals to make roundabout routes can be rationally related to the fact that equilibria in the hodological space depend upon the totality of relations in the field.

4. A variety of psychological processes, I feel, can be treated with relative adequacy with the conceptual tools at hand. These include the basic *characteristics of needs* (30, 37b, 37c, 37e, 37f, 37g, 37h, 37n), and the various ways of their gratification including substitution. The *substitute value* of one activity for another can be measured (37o, 37r, 37s), and the general conditions for substitute value can be derived. Substitution involves the basic problems of *setting up new goals* (37e, 37i, 37j, 37m, 64), and of the *level of aspiration* (17, 18, 19, 37i, 37j, 37t). In this field an important step forward has been made by the derivation (32) of the somewhat paradoxical tendency to prefer difficult goals to easy ones (a tendency which seems to contradict the "law of parsimony"). We have already mentioned that many problems related to the process of *striving for a given goal* (37j, 37l, 37m) can be attacked, particularly the relation between the *cognitive structure* (learning, insight, roundabout route) and the direction and the strength of the psychological forces (37d, 37h, 37j, 37k, 37l, 37m, 37p, 37q, 39, 65). The same holds for many problems connected

with *conflict situations* (20, 37j, 37l, 37s, 40, 47). The treatment of problems of *atmospheres* (37s, 53, 53a) might be specifically mentioned. It is possible to derive the effect of pressure of different degrees upon the degree of the momentary *personality differentiation* (7, 8, 60). The predictions concerning the effect of *frustration* upon *productivity* and *regression* have been borne out by experiment (8). The degree of *rigidity* or dynamic communication between the subparts of the person (one of the basic factors in personality besides its degree of differentiation) has been measured (33). Finally, I like to mention one result which seems to me of great consequence: the size of those regions which, at a given time, have the character of undifferentiated *units in the life space* has become measurable, at least in certain cases (14). A number of predictions about the effect of the size of these units on animal behavior have been verified (13).

As to the next tasks it is hoped that the quantitative measurement of psychological forces will be accomplished soon. This will provide the answer for the laws of the composition of forces (resultant forces) and aid in the measurement of tension. One of the most urgent improvements is required in the field of social psychology. To my mind, it is possible today to define *groups* (42, 49, 53) and group goals operationally and with the type of constructs referred to. With their help predictions have been made, and experimentally confirmed, about the effect of certain *social atmospheres* (52, 53a) on group life. However, a number of basic constructs in social psychology, including that of inducing fields (*power fields*), need refinement.

The progress thus far made in the conceptual development of psychology warrants much optimism. The idea that such phenomena as hope or friendship could ever be represented by geometrical or other mathematical concepts would have seemed beyond any realistic expectation even to the writer a few years ago. Today such representation is possible and of great help in dealing with these phenomena. I have no doubt that the concepts of topology and hodological space, or concepts of a similar nature, will prove fruitful for representation and prediction in every field of psychology. On the other hand, one of the most important factors for steady progress in any science is a good judgment in deciding which problems are ready for attack and which are better delayed until a more mature state of that science.

BIBLIOGRAPHY

(On problems developed in connection with topological and vector concepts)

1. Abel, T. M.: Neuro-circulatory reaction and the recall of unfinished and completed tasks. J. Psychol., 1938, 6, 377-383.
2. Adams, D. K.: Age, race and responsiveness of levels of aspiration to success and failure. [In] Proceedings, Forty-Seventh Meeting of the American Psychological Association, 1939, p. 570.
3. Adler, Dan L.: Types of similarity and the substitute value of activities at different age levels. University of Iowa, Unpublished Doctoral dissertation, 1939. Pp. 100 ms.
4. Adler, Dan L.: The substitute value of activities for children of different age levels. [In] Proceedings, Forty-Seventh Meeting of the American Psychological Association, 1939, p. 573.
5. Adler, D., and Kounin, J.: Some factors operating at the moment of resumption of interrupted tasks. J. Psychol., 1939, 7, 255-267.
6. Anderson, H. H., and Brandt, H. F.: Study of motivation involving self-announced goals of fifth grade children and the concept of level of aspiration. J. Soc. Psychol., 1939, 10, 209-232.
7. Barker, R. G.: The effect of frustration upon cognitive ability. Character and Personality, 1938, 7, 145-150.
8. Barker, R., Dembo, T., and Lewin, K.: Regression and frustration. To be published as a University of Iowa Study in Child Welfare, 1940.
9. Berman, Arthur: Successive reproductions of visually perceived forms. [In] Proceedings, Forty-Seventh Meeting of the American Psychological Association, 1939, p. 573.
10. Brown, J. F.: Psychology and the social order. New York: McGraw-Hill, 1936. Pp. xiv, 529.
11. Brown, J. F.: The modified Dembo technique: An application of topological psychology to experimental psychopathology. Bull. Menninger Clinic, 1937, 1, 212-219.
12. Brown, J. F.: Reactions of psychiatric patients in a frustrating situation. Bull. Menninger Clinic, 1939, 3, No. 4, 44-64.
13. Buxton, Claude: Latent learning and the goal gradient hypothesis. (To be published in Duke University Series, Cont. to Psychol. Theory)
14. Cartwright, Dorwin: Decision time and the degree of differentiation of a field. Unpublished paper read before a meeting of topological psychologists at Cornell University, December, 1938.
15. Chapman, D. W., and Volkmann, J.: A social determinant of the level of aspiration. J. Abnorm. & Soc. Psychol., 1939, 34, 225-238.
16. Dembo, T., and Hanfmann, E.: The patient's psychological situation upon admission to a mental hospital. Amer. J. Psychol., 1935, 47, 381-408.
17. Frank, J. D.: The influence of the level of performance in one task on the level of aspiration in another. J. Exper. Psychol., 1935, 18, 159-171.
18. Frank, J. D.: Some psychological determinants of the level of aspiration. Amer. J. Psychol., 1935, 47, 385-393.
19. Frank, J. D.: A comparison between certain properties of the level of aspiration and random guessing. J. Psychol., 1937, 3, 43-62.
20. Frank, J. D.: Studies in social pressure. Unpublished monograph.
21. Freeman, G. L.: Changes in tonus during completed and interrupted work. J. Gen. Psychol., 1930, 4, 309-334.
22. Freeman, G. L.: The effect of inhibited micturition upon interrupted and completed acts of unrelated origin. J. Gen. Psychol., 1938, 19, 277-284.

23. French, Thomas M.: [Book review of] *A Dynamic Theory of Personality* and *The Principles of Topological Psychology* by Kurt Lewin: Psychoanal. Quart., 1937, 6, 122-128.

24. Gardner, John W.: The relation of certain personality variables to level of aspiration. [In] Proceedings, Forty-Seventh Meeting of the American Psychological Association, 1939, p. 540.

25. Gibson, J. J., and Crooks, L. E.: A theoretical field—analysis of automobile driving. Amer. J. Psychol., 1938, 41, 453-471.

26. Gould, Rosalind: Factors underlying expressed 'level of aspiration.' J. Psychol., 1938, 6, 265-280.

27. Gould, Rosalind: An experimental analysis of 'level of aspiration.' Genet. Psychol. Monog., 1939, 21, No. 1, 3-115.

28. Householder, A. S.: Review of "Principles of Topological Psychology." J. Genet. Psychol., 1939, 54, 249-259.

29. Hovland, C. I., and Sears, R. R.: Experiments on motor conflict. I. Types of conflict and their modes of resolution. J. Exper. Psychol., 1938, 23, No. 5, 477-493.

30. Katz, E.: Some factors affecting resumption of interrupted activities by preschool children. Univ. Minn. Institute of Child Welfare Monog. Series, 1938, No. 16, Pp. 52.

31. Koffka, K.: Principles of Gestalt psychology. New York: Harcourt Brace, 1935. Pp. xi, 720.

32. Korsch-Escalona, S.: The effect of success and failure upon the level of aspiration and behavior in manic-depressive psychoses. Univ. Iowa Stud., Stud. in Child Welfare, 1939, 16, No. 3, Pp. 307 (p. 199-303).

33. Kounin, Jacob S.: Experimental studies of rigidity as a function of age and feeble-mindedness. To be published as a University of Iowa Study in Child Welfare.

34. Leeper, Robert: Some critical revisions and extensions of Lewin's topological and hodological psychology. [In] Proceedings, Forty-Seventh Meeting of the American Psychological Association, 1939, p. 502.

35. Lewin, K.: Die psychische Tätigkeit bei der Hemmung von Willensvorgängen und das Grundgesetz der Assoziation. Zsch. f. Psychol., 1917, 77, 212-247.

36. Lewin, K.: Das Problem der Willensmessung und das Grundgesetz der Assoziation. Psychol. Forsch., 1922, 1, 191-302.

37. Lewin, K. [editor]: Untersuchungen zur Handlungs- und Affekt-Psychologie [Investigations in psychology of action and emotion]. Psychol. Forsch., 1926-1930.

    (a) Lewin, Kurt: I. Vorbemerkungen über die seelischen Kräfte und über die Struktur der Seelischen [The structure of the mind]. Psychol. Forsch., 1926, 7, 294-329.

    (b) Lewin, Kurt: II. Vorsatz, Wille und Bedürfnis [Intention, will, and needs]. Psychol. Forsch., 1926, 7, 330-385.

    (c) Zeigarnik, B.: III. Über das Behalten von erledigten und unerledigten Handlungen [On the recall of completed and uncompleted activities]. Psychol. Forsch., 1927, 9, 1-85.

    (d) Schwarz, G.: IV. Über Rückfälligkeit bei Umgewöhnung. I. [On relapses in re-learning]. Psychol. Forsch., 1927, 9, 86-158.

    (e) Karsten, A.: V. Psychische Sättigung [Psychological satiation]. Psychol. Forsch., 1928, 10, 142-154.

    (f) Ovsiankina, M.: VI. Die Wiederaufnahme von unterbrochenen Handlungen [The resumption of interrupted actions]. Psychol. Forsch., 1928, 11, 302-389.

(g) Freund, A.: VII. Psychische Sättigung im Menstruum und Intermenstruum [On satiation in menstruum and intermenstruum]. Psychol. Forsch., 1930, 13, 198–217.

(h) Birenbaum, G.: VIII. Das Vergessen einer Vornahme [On the forgetting of an intention]. Psychol. Forsch., 1930, 13, 218–284.

(i) Hoppe, F.: IX. Erfolg und Misserfolg [Success and failure]. Psychol. Forsch., 1930, 14, 1–62.

(j) Dembo, Tamara: X. Der Ärger als dynamische Problem [Anger as a dynamic problem]. Psychol. Forsch., 1931, 15, 1–144.

(k) Voigt, Günter: XI. Über die Richtungspraezision einer Fernhandlung [Precision of direction of an action through distance]. Psychol. Forsch., 1932, 16, 70–113.

(l) Fajans, Sara: XII. Die Bedeutung der Entfernung für die Stärke eines Aufforderungscharakters beim Säugling und Kleinkind [Distance and strength of a valence in infants and young children]. Psychol. Forsch., 1933, 17, 215–267.

(m) Fajans, Sara: XIII. Erfolg, Ausdauer, und Activität beim Säugling und Kleinkind [Success, persistency, and activeness in infants and young children]. Psychol. Forsch., 1933, 17, 268–305.

(n) Brown, J. F.: XIV. Über die dynamischen Eigenschaften der Realitäts und Irrealitätsschichten [On the dynamic properties of the levels of reality and irreality]. Psychol. Forsch., 1933, 18, 1–26.

(o) Mahler, W.: XV. Ersatzhandlungen verschiedener Realitätsgrade [Substitute activities of different levels of reality]. Psychol. Forsch., 1933, 18, 27–89.

(p) Schwarz, G.: XVI. Über Rückfälligkeit bei Umgewöhnung. II [On relapses in re-learning]. Psychol. Forsch., 1933, 18, 143–190.

(q) Forer, S.: XVII. Eine Untersuchung zur Lese-Lern-Methode Decroly [On the reading method of Decroly]. Z. f. Kinderforschung, 1933, 42, 11–44.

(r) Lissner, K.: XVIII. Die Entspannung von Bedürfmissen durch Ersatzhandlung [The discharge of needs by substitute activities]. Psychol. Forsch., 1933, 18, 218–250.

(s) Sliosberg, S.: XIX. Zur Dynamik des Ersatzes in Spiel und Ernstsituationen [On the dynamics of substitution in play]. Psychol. Forsch., 1934, 19, 122–181.

(t) Jucknat, M.: XX. Leistung, Anspruchsniveau und Selbstbeurisstsein [Performance, level of aspiration and self-consciousness]. Psychol. Forsch., 1937, 22, 89–179.

38. Lewin, K.: The conflict between Aristotelian and Galilean modes of thought in contemporary psychology. J. Gen. Psychol., 1931, 5, 141-177.

39. Lewin, K.: Vectors, cognitive processes, and Mr. Tolman's criticism. J. Gen. Psychol., 1933, 8, 318-345.

40. Lewin, K.: Chapter XIV. Environmental forces. [In] Murchison, Carl [editor]: Handbook of Child Psychology, 2nd rev. ed. Worcester, Mass.: Clark University Press, 1933, Pp. xii, 956. (p. 590-625)

41. Lewin, K.: Der Richtungsbegriff in der Psychologie [The concept of direction in psychology]. Psychol. Forsch., 1934, 19, 249-299.

42. Lewin, K.: Psycho-sociological problems of a minority group. Character & Personality, 1935, 3, 175-187.

43. Lewin, K.: Some social-psychological differences between the United States and Germany. Character & Personality, 1936, 4, 265-293.

44. Lewin, K.: Psychology of success and failure. Occupations, 1936, 1-5.

45. Lewin, K.: Principles of topological psychology. New York: McGraw-Hill, 1936. Pp. 231.

46. Lewin, K.: Psychoanalysis and topological psychology. Bull. Menninger Clinic, 1937, 1, 202-212.

47. Lewin, K.: The conceptual representation and the measurement of psychological forces. Duke Univ. Series, Cont. to Psychol. Theory, 1938, 1. No. 4, Pp. 247.

48. Lewin, K.: Experiments on autocratic and democratic atmospheres. Soc. Frontier, 1938, 4, No. 37, 316-319.

49. Lewin, K.: Field theory and experiment in social psychology: Concepts and methods. Amer. J. Soc., 1939, 44, No. 6, 868-897.

50. Lewin, K.: Experiments in social space. Harvard Educ. Rev., 1939, 9, No. 1, 21-32.

51. Lewin, K., and Lippitt, R.: An experimental approach to the study of autocracy and democracy: A preliminary note. Sociometry, 1938, 1, 292-300.

52. Lewin, K., Lippitt, R., and White, R. K.: Patterns of aggressive behavior in experimentally created "social climates." J. Soc. Psychol., 1939, 10, No. 2, 271-299.

53. Lippitt, R.: Field theory and experiment in social psychology: Autocratic and democratic group atmospheres. Amer. J. Soc., 1939, 45, No. 1, 26-49.

53a. Lippitt, R.: An experimental study of authoritarian and democratic group atmospheres. [In] Lewin, Kurt, Lippitt, Ronald, and Escalona, Sibylle Korsch.: Studies in Topological Psychology. Univ. Iowa Stud., Stud. in Child Welfare, 1939, 16, No. 3, Pp. 307. (p. 43-198)

54. MacColl, Sylvia H.: A comparative study of the systems of Lewin and Koffka with special reference to memory phenomena. Duke Univ. Series, Cont. to Psychol. Theory, 1939, 2, No. 1, Pp. 160.

55. Marrow, A. J.: Goal tensions and recall. (I & II) J. Gen. Psychol., 1938, 19, 3-35; 37-64.

56. McKinney, Fred: Studies in the retention of interrupted learning activities. J. Comp. Psychol., 1935, 19, 265-296.

57. Pachauri, A. R.: A study of Gestalt problems in completed and interrupted tasks: Part I. Brit. J. Psychol. (Gen. Sect.), 1934-1935, 25, 365-381.

58. Philp, Alice J.: An approach to the mental organization of the feeble minded. [In] Proceedings, Forty Seventh Meeting of the American Psychological Association, 1939, p. 507.

59. Reichenberg, W.: An experimental investigation of the effect of gratification upon effort and orientation to reality. Amer. J. Orthopsychiat., 1939, 9, 186-205.

60. Rickers Ovsiankina, Maria: Studies on the personality structure of schizophrenic individuals: Part I. The accessibility of schizophrenics to environmental influences. Part II. Reaction to interrupted tasks. J. Gen. Psychol., 1937, 16, 153-178; 179-196.

61. Rosenzweig, Saul: The recall of finished and unfinished tasks as affected by the purpose with which they are performed. Psychol. Bull. (Abstract) 1936, 33, 698.

62. Sears, Pauline S.: Levels of aspiration in academically successful and unsuccessful children. [In] Proceedings, Forty-Seventh Meeting of the American Psychological Association, 1939, p. 539.

63. Sears, Pauline S.: Levels of aspiration in academically successful and unsuccessful children. Yale University, Doctoral dissertation, 1939.

63a. Twitchell-Allen, Doris: Restructuring the psychological personality in a case of regression. Published by The Children's Hospital, Cincinnati, Ohio, 1937.

64. Wolf, T. H.: The effect of praise and competition on the persistent behavior of kindergarten children. Univ. Minn. Institute of Child Welfare Monog. Ser., 1938, No. 15, Pp. 138.

65. Wright, H. F.: The influence of barriers upon strength of motivation. Duke Univ. Series, Cont. to Psychol. Theory, 1937, 1, No. 3, Pp. 143.

ADDITIONAL REFERENCES

66. Ach, N.: Über den Willensakt und das Temperament: Eine experimentelle Untersuchung. Leipzig: Quelle und Meyer, 1910, Pp. 324.

67. Einstein, A.: Sidelights of relativity. Dutton, 1923. Pp. 56.

68. Freud, S.: Moses and Monotheism. Knopf, 1939.

69. Hull, C. L.: Goal attraction and directing ideas conceived as habit phenomena. Psychol. Rev., 1931, 38, 487-506.

70. Hull, C. L.: The conflicting psychologies of learning—a way out. Psychol. Rev., 1935, 42, 491-516.

71. Hull, C. L.: Mind, mechanism, and adaptive behavior. Psychol. Rev., 1937, 44, 1-32.

72. Hull, C. L.: The problem of stimulus equivalence in behavior theory. Psychol. Rev., 1939, 46, 9-30.

73. Koehler, W.: Gestalt psychology. New York: Liveright Publishing Corp., 1929. Pp. 403.

74. Lewin, K.: Der Begriff der Genese in Physik, Biologie und Entwicklungsgeschichte. (The concept of genesis in physics, biology, and theory of evolution). Berlin: Julius Springer, 1922.

75. McDougall, W.: The hormic psychology. [In] Psychologies of 1930. (Ed. Carl Murchison) Worcester, Mass.: Clark University Press, 1930. Pp. xix, 497.

75a. Murray, Henry A.: Explorations in personality. New York: Oxford University Press, 1938. Pp. xvi, 761.

76. Reichenbach, Hans: Philosophie der Raum-zeit-lehre. (Philosophy of the space-time doctrine). Berlin: De Gruyter, 1928. Pp. 380.

77. Tolman, E. C.: Purposive behavior in animals and men. New York: Century Co., 1932. Pp. xiv, 463.

78. Tolman, E. C.: The determiners of behavior at a choice point. Psychol. Rev., 1935, 45, 1-41.

PART TWO

AN EXPERIMENTAL STUDY OF THE EFFECT OF DEMOCRATIC AND AUTHORITARIAN GROUP ATMOSPHERES

by

Ronald Lippitt

AN EXPERIMENTAL STUDY OF THE EFFECT OF DEMOCRATIC AND AUTHORITARIAN GROUP ATMOSPHERES

AIM OF THE STUDY

At its inception the present research had as its aim the study of the influences upon the group as a whole, and upon the individual child member, of certain experimentally induced group "atmospheres" which would serve as a framework for group ideology and individual behavior patterns. Because of its basic importance for several fields of social science, notably education, political science, mental hygiene, and social psychology, the contrast between authoritarian and democratic "social climates" was proposed as the point of departure for this preliminary "field theoretical" excursion into the processes and social resultants of group life.

RELATED STUDIES

A rather thorough survey of several fields of research, particularly social psychology, child psychology, sociology, cultural anthropology, education, industrial psychology, and group work has revealed no investigation which could be called a "previous study." On the other hand to report the studies which relate themselves to the main aim or secondary problems of this research would be far too extended a task to fall within the scope of the present research. Therefore a middle way has been chosen of indicating briefly what the present investigator regards as a few of the most significant examples of related research from several fields of study.

Pigors' (38) comprehensive cross-sectional analysis of leadership and domination as contrasting methods of group organization and process, with reference especially to political groups, child development, industrial organization, and primitive societies, has contributed greatly to the determination of the "atmospheres" of the experimental groups in this study, and will be discussed in that regard later. While discarding, as *a priori* data, the valuations there placed upon the two types of group life, his study was judged

to furnish the best description of factors to be taken into account in organizing democratic and authoritarian group life.

From the field of child psychology Murphy (34) has demonstrated the tremendous influence of the parent and school teacher upon the "culture pattern" of a preschool group in regard to sympathetic and aggressive behavior. This study has also indicated the fruitfulness of aproaching the child's personality organization by way of his group memberships, collective experience, and group status. "Inconsistency" of behavior is then viewed as a unified, consistent picture of the adapting child in the particular situation. Hanfman (18), in an ingenious study of the social structure of a group of kindergarten children in an experimental play situation, has found a complex interplay of social status relationships for which such labels as "ascendant" and "submissive" were inadequate. Several European investigators, particularly Doroschenko (14), Salusky (42), and Chevaleva-Janovskaja (8) have made observations of interest for the present study. Chevaleva has studied the internal and external reasons for group structure disintegration and has demonstrated a relationship, which others have corroborated, between a "natural" group size and the age of the members. Salusky, citing also the work of Doroschenko, reports the very significant observation that children whose parents participated in co-operative, communal life, played together in larger, more stable group structures than children whose parents were individualistic, nonparticipating village members. Maller (28) found in addition that his most group-minded children in metropolitan schools had more other group memberships (boy scouts, girls scouts, etc.) than the more individualistically oriented class members. Some of the social resultants of the lives of our two groups clearly relate themselves to Anderson's (1) findings as to the differences between integrative and dominative interpersonal relations. Anderson has indicated a close relationship between social status security or insecurity and the existence of "we-centered" (integrative) or "I-centered" (dominative) behavior. Wiehe [1] made an ingenious study of the influence of the social powerfield of a stranger upon the behavior of the young child at various distances from the stranger, in familiar and unfamiliar physical surroundings. The different potencies of domination of the powerfield seemed to have rather clear-cut behavioral concomitants, ranging from friendly, free, secure activity to a tense paral-

[1] Wiehe, F.: Die grenzen des ichs. Unpublished manuscript.

ysis of even motor activity in the most insecure regions. There was evidence of increasingly ego-centered orientation with greater strength of the hostile powerfield. In a more general, but fully as significant manner, the researches of Wellman (48) and Skeels (45) seem to indicate the importance and immediate effect of free, stimulating, social atmospheres upon the intellectual development of the child. Piaget (36) has studied the development of boys' attitudes toward the rules of the game of marbles and found that at the younger ages, when the rules were looked upon as representing an external, "divine" authority, these social controls were much less binding than later when the boys regarded the rules as their own, developed and altered by co-operative group decisions. Referring especially to the work of Rombach (41) and Reininger (39), Pigors (37) surveyed the few studies bearing directly upon leading and dominating behavior in children.

"Summing up the whole question of leadership and domination among children, it is apparent that much confusion arises unless a clear line of demarcation is drawn between domination and leadership. For these two processes are different in origin and method. Domination, being the simpler process, makes its appearance earlier in the life of the child and its source is the dominator's will to power. And yet, curiously enough, for all his insistence on superiority, it seems that the dominator is a far more helpless individual than the leader. Lacking the leader's inner strength and resourcefulness, the dominator depends on external aid and the appearance of authority, and when left alone is powerless to amuse himself even. The leader's authority, on the other hand, is often conferred on him spontaneously by others. Having the capacity to direct and stimulate their activity, he is asked to use this power for the common good. To be successful in this, he must be keenly aware of the capacities and desires of each of his followers, must have a practical knowledge of how the common cause can best be advanced, and most important of all, their interest must be his interest. Without genuine community of purpose, leadership cannot really be effective. What children demand of a leader is that their lives shall be richer because of his activity, and what they most resent in a dominator is that he passes over their interest in favor of his own." (35, p. 136)

An examination of the findings of experimental social psychology, other than its child psychology aspects, brings little of present interest to light. Dashiell's (10) rather typical study reveals by its methodology and aims, why, in the opinion of the present investigator, social psychology has gotten at so few of the fundamental problems of this field. Dashiell sets up four questions for the experimenter in social psychology to answer: What is the effect upon the individual's work of: (1) the presence of quiet audi-

tors or spectators; (2) overt vocal attitudes on the part of others: (3) the presence of a coworking but noncompetitive group; (4) the presence of competitors working in explicit rivalry. He concludes with the statement, "Through all of these problems run indications of the need for more and more *analytic*[2] research." (10, p. 191). Riddle's (40) rather classic investigation reaches "analytic" heights in the study of the physiological and psychological concomitants of a poker game and makes a noteworthy attempt to set up a free group game situation under laboratory conditions.

From the investigations of clinical psychology and social work come several relevant findings. Witmer (51) has done much to throw light upon some of the subtle factors operating in the family atmosphere in her studies of the social, behavioral resultants of the insecure family status of rejected children. Boggess (4) has made a contribution in the same direction with her study of the influences of conflicting family and neighborhood group memberships in the slum area. Methodologically the present study is in harmony with the appeal of Sheffield (42) that social case work should choose as its field of study not the "personality-centered unit" but a "dynamic segment of experience," a total life situation with all its group member interrelationships.

An examination of sociological literature reveals, first of all, Thrasher's (47) pioneer study of the group process in gangland. Here are a wealth of clues as to the difference in effect upon group life of external, hostile authority and internal authority by concensus. The basic problems of social life — centrality or peripherality of group belongingness, stratification of prestige, group goals versus individual goals, unification or disintegration under tension, the emergence of scapegoats, etc.— stand out from this array of group-life histories, awaiting refined experimental study. Faris (16) and Dunham (15) have contributed some important leads concerning the importance of stable group memberships for individual security and stable personality equilibrium in their studies of the social ecology of psychoses. Dollard (13) has demonstrated the efficacy of a wider approach to the tension areas of group and individual life with his study of a southern community, and Lindeman (27) has pointed a way of preserving both the individual and the group as realities in socio-psychological research.

Research by cultural anthropologists contributes much to the orientation of this investigator, as it did to Murphy in her study.

[2] Author's italics.

The findings of Mead (31) and Benedict (3), especially, force the present experimenter to view the present investigation in its larger, sociologically defined setting and to be cautious in generalizing, without more widespread confirmation, from this particular experiment and this particular culture.

Education, for which this problem of the resultants of authoritarianism versus democracy is a central problem, has contributed little of an experimentally controlled nature to the clarification of the issue. Harris (19) ends his comprehensive historical analysis of changing practices in school discipline with the comment,

> "Consequently, methods of control change with the medium of social custom in which they operate. As an example, a diminished efficacy of direct, authoritarian discipline is at present obvious to both teacher and parent, but the fact usually eludes analysis or comprehension. It is so, and that usually ends the matter." (19, p. 343)

Perhaps it does for the educator, but it must begin the matter for the social and child psychologist. A tremendous volume of attention is being given at present by educators to this problem of democratic and authoritarian controls as indicated by the recent remarks of Gosling (17), Miller (32), Johnson (22), Butler (7), Williams (50), chosen more or less at random from current educational literature. Wrightstone (52) has made the most significant scientific approach, noted by the present investigator, in his rather careful appraisal of traditional and progressive school practices and their educational resultants.

Lasswell (24) points out that the problems which the political scientist regards as fundamental are akin to, though not identical with or analagous to, the primary concern of our experiment.

> "The fundamental problems have to do with the discovery of the conditions of political order and disorder. Under what conditions does political change proceed with a maximum or minimum amount of violence? To put the same question in a different way, when is law altered by violence and when by acts short of violence? This is the problem of exposing the causes of drastic revolutionary upheavals and of war, which are extreme examples of inharmonious interpersonal relationships. Stating the matter affirmatively, political science is interested in ascertaining the causes of harmonious and inharmonious personal relationships among large groups of persons." (24, p. 34)

Schuman's (43) careful study of the development and social resultants of one particular authoritarian atmosphere contains many clues for the experimental social psychologist to follow up.

Moreno (33) has made a valuable step toward the integration of psychological and sociological viewpoints with the development of what he has called sociometry, a study of the structure of interpersonal relationships in a group situation. Using this method of study with especial ingenuity Jennings (21) has studied longitudinally the influences upon stability of group structure of a reorganization of members, and the changes that take place in leadership status in a large group over a period of time.

Many comparative psychologists maintain that the basic factors of social organization and the processes of group life may be studied at the animal level. Maslow's (29) observations of dominant behavior in the group life of monkeys is an example, and Zuckerman (53) has reviewed some of the data at this level.

In the field of group work, as in education, little that can be called research has been carried out to aid the practicing group worker. Two recent studies in this area seem to indicate, however, that experimental sociology may profit much by the work of students oriented primarily in group work. Dimock's (12) study of the development and social interrelationships of a selected group of adolescents stresses the moulding influence of the particular group membership character, and stresses the importance of the particular cultural framework within which the study was carried out. Newstetter, Feldstein, and Newcomb (35), observing social behavior in a boys' camp, faced many of the same observational problems as the present researcher — techniques for the observation of activity groupings, criteria for an index of group status, for recording social interaction, etc. Their emphasis upon "significant," meaningful social behavior data is in many respects similar to that of the present study, although their analysis was of quite a different sort. Coyle (9) has published a series of club life histories which demonstrate the processes of democratic group life in practice. Busch (6) has given a clear description of authoritarian and democratic contrasts in club leadership.

Peculiarly enough the field of industrial psychology discloses the most careful and comprehensive experimental study of group life and the effect upon it of certain defined atmospheres. The publications of Mayo (30) and Whitehead (49) deserve a much fuller review than space permits. Studying experimental groups under carefully controlled conditions in a large industrial plant, interested primarily in worker productivity, they found some striking relationships between the social atmosphere of the work situation

and the efficiency of the workers. After altering hours, rest periods, and other factors of working conditions it was found that productivity continued to rise in spite of, rather than because of, such routine changes in their conditions. But the moment the freedom and self-directedness of the situation broke down, the morale and productivity tended to disintegrate. Mayo remarks:

> "A relationship of friendliness has been established with these girls (experimental group of 6) to such an extent that practically no supervision is required. In the absence of any drive or urge whatsoever they can be depended upon to do their best. They say they have no sensation of working faster now than under previous conditions. . . . Comment after comment from the girls indicates that they have been relieved of the nervous tension under which they previously worked. They have ceased to regard the man in charge as a 'boss' . . . they have a feeling that their increased production is in some way related to the distinctly freer, happier, and more pleasant working environment." (30, p. 77-78)

Whitehead notes,

> "In every case, the degree in which the speed fluctuation of two workers corresponds, relates itself in some fashion to their mutual sentiments . . . it is roughly true to say that in all the spans, mutual sentiments of approval usually result in positive correlations; and active antagonisms result in negative correlations; whilst an absence of significant correlations accompanies mutual indifference. . . . Perhaps the outstanding things about this complexity of statistical relations between any two girls is that nothing in the formal arrangement of their work necessitated, or even suggested it. . . . Evidently group integration depends on the mutual support of social sentiment and social action, not only at an explicit level, but also in ways far below direct observation . . . such statistical relations build up first between girls sitting next to each other, whilst 'distant pairs' only become related some months later." (49, p. 50-51)

PROBLEMS OF METHODOLOGY AND EXPERIMENTAL TECHNIQUE

A Field-Theoretical Approach to the Problem

From the field-theoretical viewpoint the atomistic approach to the field of experimental social psychology has led its proponents progressively away from the important problems awaiting analysis by the socio-psychologist, up a never-ending byway of search

for "objective," "statistically reliable" categories of behavior description. An outstanding behavioristic social psychologist sums up a concerted attempt to reduce social behavior items to units for statistical analysis in this fashion,

> "Experimentation with units indicates that this interchangeability [necessary for statistical treatment] can be claimed only where very simple elements are observed. Our attempts to record more complicated situations (e. g. aggressive acts, resistant acts) have led to claims of a qualitative similarity (as indicated by relatively high reliability on simultaneous observations) but no quantitative equivalence . . . these units of resistance are not interchangeable or additive. An attempt has been made to make one unit 'mean' the same as another, but in form they differ greatly from one another. For statistical analysis of observational materials equality of form is more important than equality of meaning. . . . The units finally evolved often seem far removed from the problem under investigation. That this situation is disappointing is probably due to the fact that, as sociologists, we are accustomed to dealing with all of life, that most of us are reformers at heart and anxious for immediate solutions, and that few of us are willing to break down our problems to a point capable of scientific treatment for fear that we can never build them up again to their original magnificent proportions." (46, p. 455-456)

The sad part is that when we assemble our broken down units we never again find the "original magnificent proportions." The "child giving another child his toy" or the "child hitting three children who are near him" just can't be assembled into the picture of "the Arapesh child giving his toy to a playmate in a culture that regards submissive sharing as the road to social status, rather than dominant maintenance of personal property rights," or the picture of "the metropolitan child in an ambivalent American culture hitting his companions on his first day in the new school." Lewin remarks,

> ". . . is the question of democracy not much too 'complicated' for a direct experimental attack? Does not a scientific analytical study of such a phenomenon imply the necessity of breaking the problem up into smaller units to be approached one by one? . . . Science has to be analytical in determining and measuring the factors influencing behavior. However, that does not mean that the experiments have to split up objects and events into smaller parts. An isolated ion behaves very differently than in its setting within an atom. You cannot study the behavior of molecules by studying only the atoms

> in isolation, or more generally, you cannot study wholes without keeping them intact. Similarly, one cannot study group life or draw conclusions for group life by making experiments on isolated individuals.'' (26, p. 316)

Lewin (25) and Brown (5) have clearly treated field theory as a method of science and have discussed some of its implications for psychology and social psychology. Suffice it to add in the present discussion that a field theoretical study of group life must: (1) regard the group as a whole, existing in a larger social field with many overlapping dynamic relationships (influence of family and school membership, etc.); (2) regard the group as composed of interdependent parts or members (implies criterion of interdependence as basic definition of a group); (3) regard each member as existing in a social field in which even the ''individual'' problems must be viewed in a framework of group membership; (4) demands that observational analysis shall recognize these basic assumptions by observing group and individual activities in terms of meaningful wholes, always relating units of observation to their larger setting. We find that data gathered in this fashion can usefully be analyzed with a double frame of reference, that of the individual group member and of the group as a dynamic unity.

''Group Atmosphere''

Clearly it is methodologically meaningless in studying authoritarian and democratic procedures experimentally to be guided mainly by the question: What is ''the'' prototype of democracy and what is the ''true'' autocracy. The investigator should realize from the start that there are many varieties of such atmospheres. The experimentalist can only try to attack one case at a time. What type of democracy should be chosen should be less guided by the tendency to copy some historically given case than by the attempt to realize those types of group atmospheres which promise the best insight into the underlying dynamics and laws. Only the insight into these laws, and not the search for some prototype, will enable us to answer the question of what are the common properties and individual differences of particular authoritarian and democratic groups.

How do we characterize ''group atmospheres'' in our experience? The school visitor observes how the children, bent over their desks, steal moments of whispering with one eye on the teacher, look sullen when she calls on them, and heave a sigh when she leaves the

room. "What a repressed atmosphere," the visitor remarks. The professor sees his candidate for a degree sitting on the edge of his chair, biting his fingernails as he waits for the first question. "What a tense situation it is for him," he thinks. An onlooker wanders into the Boys' Club and sees a group of ten boys and their leader busily co-operating on a leatherwork project. "What a work-minded, friendly atmosphere," he thinks. A cultural anthropologist observes a group of Arapesh children at play and decides, "What a pacifistic, unselfish atmosphere." A visitor at one of the sessions of this research remarked afterward, "You may be democratic but it seems like a very rigid atmosphere to me" (she had come on the day of an autocratic meeting by mistake). What then is our task as we set out to create such situations and such group lives that the reader would label them, after brief observation, "democratic atmosphere" and "autocratic atmosphere"? What are the factors which make up this unity we have called a "social atmosphere"? What steps can we take to create and control it?

From common experience an array of items present themselves as related to the total group atmosphere-size of the group, hostilities, activities, age of the members, friendships, individual goals, group characteristics, physical space of free movement, and many others. Only by analyzing their interrelated functions can we get some idea of how to control and manipulate the essential constituents of the atmosphere. As a first approximation to order we might divide the atmosphere into (1) social factors, (2) physical setting, and (3) nature of the group activity. For this investigator the first item, social factors, resolves itself into (a) the group and its properties, (b) the position of the group in the larger social field, (c) the individual characteristics of the group members. Doubtless some other schema for surveying the group in its field could be chosen, but this one has proved to be very valuable in analyzing the problem before us of experimental variables and controls. We shall first give a general definition of these constituents, then relate each to the methods of experimental control and variation used in this experiment.

The Group and Its Properties

Every group seems to have certain features which we can grasp immediately in attempting to describe it. We can quickly grasp and "map out" the number of members and the fact that they

have a president and treasurer, but we become vague in describing and explaining their preference for material security rather than free speech, or for heavy leather shoes when sandals are available. In a very tentative manner we have placed the properties of the group under two main headings — structural and dynamic properties.

Structural Properties. — (1) Degree of differentiation: By this we mean merely the number of subparts which make up the group unity, the number of members or subgroups in the group. Depending on the frame of reference of the study the individual members or larger subgroups may be regarded as the natural subparts of the whole.

(2) Degree of stratification: Here we consider the particular arrangement of the subparts in the group structure. Every group has a more or less complex hierarchy of social status in which certain members are more central and important for the group organization and others are more peripheral and unimportant. In some groups, such as one having a caste system, the stratification is rigid and members' positions are fixed. In others, such a democratic boys' club, the stratification may be rather fluid with members frequently changing from peripheral to central positions, or vice versa, as new activities call forth new experts with special talents. The status stratification of group members may obviously be quite different in the same group according to the criteria used, e. g., wealth, strength, social influence, official capacity, etc.

(3) Type of organization: Closely related to degree of stratification is the particular kind of social hierarchy which has been institutionalized in the group structure. Is there a president, vice-president, secretary and treasurer, or is there a board of directors? A large corporation and a fascist nation may both be authoritarian but still have quite different types of organization in the formalistic sense. Type of organization is a question of the mechanics of a given degree of stratification. Asymetrical influence (i. e., more influence in one direction than the other between two strata of a group) is basic to the idea of group organization, and is of especial interest in regard to the dynamics of policy formation.

(4) Degree of unity: Here we consider the extent of the interdependence between the group members. Are they a co-operative, closely knit group, or are they individualistic, exerting little mutual influence upon one another? Do egocentric hostilities tend to

create a disintegrated group structure or do group-centered, friendly attitudes make for a harmonious atmosphere? As Mead (31, p. 16) has pointed out, it is important to distinguish between degree of unity, or collectivity, of group *activity* and degree of unity of group *members* and *goals*. The activities of the group members, for example, may be highly individualistic and independent in a behavioral sense but may be highly interdependent as far as the interrelationships of the members are concerned in their locomotion toward a group goal or in some other respect.

Dynamic Properties. — (1) Group goals: These are just as much of a reality as individual goals. No group is just "doing nothing." It is moving, making locomotions in its social field. "We're going to put on a play." "we're going to make things out of tin cans," "we're going to take a hike," "we're making a cabin," "we're making leather belts" are everyday examples of group goals and locomotions. To be sure we look with some doubt for a group goal when we see a club of five boys carrying on five completely independent activities, or fighting for possession of a baseball. Where is the group goal here? Then we study the group a little more carefully in relation to its total social field and we find that there are two very mutual goals which largely explain the existence of this group — "stealing fruit from Tony" and "protecting our block against Carny's gang." If there was no common factor of at least one group goal or some other type of unifying factor there could be no group. The extent to which the group goal commands the concerted activity of the particular member is probably dependent upon the potency of his feeling of belongingness to the group.

(2) Group ideology: Why do the children in one primitive tribe grow up to consider submissive behavior a virtue, and the children in a second tribe to consider fighting prowess the highest value. Every group has, to a greater or less degree, something in the nature of what Lewin has called "ideal goals," a framework of ideology which determines for the individual member what his values, and thus his more general goals, shall be. Closely related to ideology but having important distinctions in our opinion is a third functional property.

(3) "Style of living": If we may call ideology the commonly accepted framework of goals and background of values, we might call "style of living" the commonly accepted manner of thinking and

acting in locomoting toward these goals. In this rough distinction we relate ideology to goal-setting and style of living to means-behavior. Shaking hands rather than rubbing noses, or trying to be the most boastful rather than the most modest person in the group would be differences in style of living.

The Position of the Group in the Larger Social Field

Just as a particular need or tension system in the individual cannot be studied in isolation from the other systems in communication with it, and just as the individual must always be seen as interdependent with other persons, so the group cannot be clearly segregated from the larger social matrix of a certain society. Many groups overlap each other in their membership and have many areas of interdependence. A very crabby, autocratic teacher may produce overactive, "release" behavior in the Scout troop whose membership is drawn largely from her room. A pay cut in the factory may add much tension to family life.

Individual Characteristics of the Members

The boy in the club is not just "group member." He is also "Johnny." We might argue that "Johnny" is composed of previous group memberships, but that is fruitless for our purpose. Jim brings to the new club a confidence in his ability to "boss" which has been gained through a series of previous experiences. Mary brings with her into the club the technique of bursting into tears when she wants to get her own way. Each member brings a host of "individualities" which we label intelligence, interests, abilities, needs, etc. We must be psychologists as well as sociologists if we would build and analyze our group atmospheres adequately.

Physical Setting

The physical space of free movement of a group may be a very important factor. Twenty preschool children in a small room is quite a different situation from twenty preschool children in a spacious play yard. Organizing a successful club in a bare, cement-walled room is quite different from a similar attempt in an attractive, well-furnished, "fire-placed" club house.

The Nature of the Group Activity

It might be suggested that group activity should be included in the discussion of group goals. To be sure the group activity is usually a group goal, but we have taken for separate consideration

here the intrinsic nature of that activity and its influence upon our whole picture of the group in process. A discussion of what color to paint the mask has quite a different type of influence upon the structure of group life than an activity in which each member is individually designing his idea of what kind of mask ought to be made. To engage in the activity of carving wooden daggers enforces an individualistic activity-group structure. To engage in the activity of painting a large mural enforces a unified structure. In general, some group activities demand a high unification of group structure, others leave freedom for either a unified or individualistic structure, and still others seem to encourage a disintegrated type of social interrelationship, or even enforce complete lack of interdependence.

The Experimental Group Atmospheres

We are now ready to consider, within the preceding conceptual framework, the constituents making up our experimental group atmospheres. The techniques utilized for controlling some of them and manipulating others in a describable manner will be discussed. It quickly became clear that the methods utilized in experimental child psychology and social psychology had neither solved nor faced many of the problems in this area. This study often therefore had to take as its most pressing aim the development of techniques. Many of these preliminary steps were far from satisfactory, but made possible the more adequate controls of the second study now in progress.

The Groups and Their Properties

The intent of the experiment was to create two new groups under rather carefully controlled conditions. The observation of their lives, from beginning to end, was to be the main object of study. Even strangers, thrown together in a group situation for the first time, are not completely lacking in "group properties." These children were fellow classmates with some other common group memberships (e. g. the Cubs). What then could be done to insure that in their significant relationships these two groups could be equated at the beginning of their lives?

Structural Properties. — (1) Degree of differentiation: Each group consisted of five members and the adult leader. This number was chosen chiefly because the investigator considered it the smallest social unit sufficiently complex for a study of "group life" and the largest unit upon which our particular observation

techniques could be conveniently developed and utilized at this stage. The investigator realized that the size of the group is an important factor in studying many aspects of group life (e. g. institutionalized stratification, representation), but that other dynamic factors are largely independent of degree of differentiation.

(2) Degree of stratification, and (3) type of organization: It was the intent of the leader to introduce no formal organization (club officers, etc.) into the club life. It seemed to him that it would lessen considerably the freedom of unartificial experimental manipulation of the groups. Also the children would come into the club with differing degrees of popularity and leadership prestige. Using the Moreno sociometric technique [3] we were able to get some indication of the stratification existing in the two classrooms from which our groups were to be chosen. A rough popularity index was computed (first choice friend +4, second choice +3, third choice +2, fourth choice +1; strongest rejection −4, second rejection −3, etc.) We were able then to roughly equate the two groups on popularity stratification. A further check on leadership stratification was made by observation on the playground and interrogation of the teachers. It might be very disastrous to get three natural leaders in one group and none in the other. The two types of stratification, as shown below, are of considerable interest in their lack of agreement. It was judged from observation and discussion with the teachers that each group had only one real leader (Dick and Tom). It must be kept in mind that this is not an analysis of the stratification as it existed in the clubs. We are considering them here as if they were a subgroup of the classroom. These are measurements and observations made in the class group, attempting to predict to some extent the alignment of the social status hierarchy as the two groups met on the first day of their new club experience. Outstanding shifts in this order would be recorded in the observations of club life and could be identified as a function largely of the new group atmosphere (or of some major shift in the classroom situation).

Order of Stratification	*Popularity*		*Leadership*
	Fifth Grade (A Group)		
Highest	Jack	(+)*	Tom
Second	Joe	(+)	Joe
Third	Harry	(0)**	Harry
Fourth	Sarah	(−)	Jack
Lowest	Tom	(−) **	Sarah

[3] See questionnaire blank in Appendix.

Order of Stratification	*Popularity*		*Leadership*
	SIXTH GRADE (D GROUP)		
Highest	Dick	(+)	Dick
Second	Helen	(+)	Mack
Third	Mack	(0)	Sue
Fourth	Sue	(—)	Jim
Lowest	Jim	(—)	Helen

*Total popularity score positive
**Total popularity score neutral
***Total popularity score negative

Degree of Unity. — To pick a highly interdependent clique of friends from one class and five mutually indifferent or hostile children from the other would probably alter the whole atmosphere of the situation and obviously hamper the interpretation of many of the results. Our only recourse here was to analyze the sociometric results to see the specific affinities and rejections existing between the members-to-be of the club as they lived in the schoolroom group. It seemed to the investigator that it would be advisable to choose children who were not especially closely related, but who did not have many feelings of rejection. It was presumed that any interpersonal relations that developed during the life of the club could then be more closely related to the common life space of the new group experience. The sociograms reproduced below indicate that we were quite successful in that regard. (Figure 1) Scoring attraction connections positively (+1, +2, +3, +4) and rejection lines negatively (−1, −2, −3, −4) as before we find that the group which, by chance (see p. 76), became the authoritarian group has a total score of +9 and −6, and the democratic group has a score of +10 and −4. In tabulating the types of interpersonal relationships we also find a satisfactory parallelism:

Relations	*A Group*	*D Group*
Attraction lines	4	4
Rejection lines	3	3
Indifference lines	13	13
Mutual attractions	1	1
Mutual rejections	0	0
Mutual indifferences	5	4
Ambivalent relations	1	0
Attraction reciprocated by indifference	1	2
Rejection reciprocated by indifference	2	3
Total	30	30

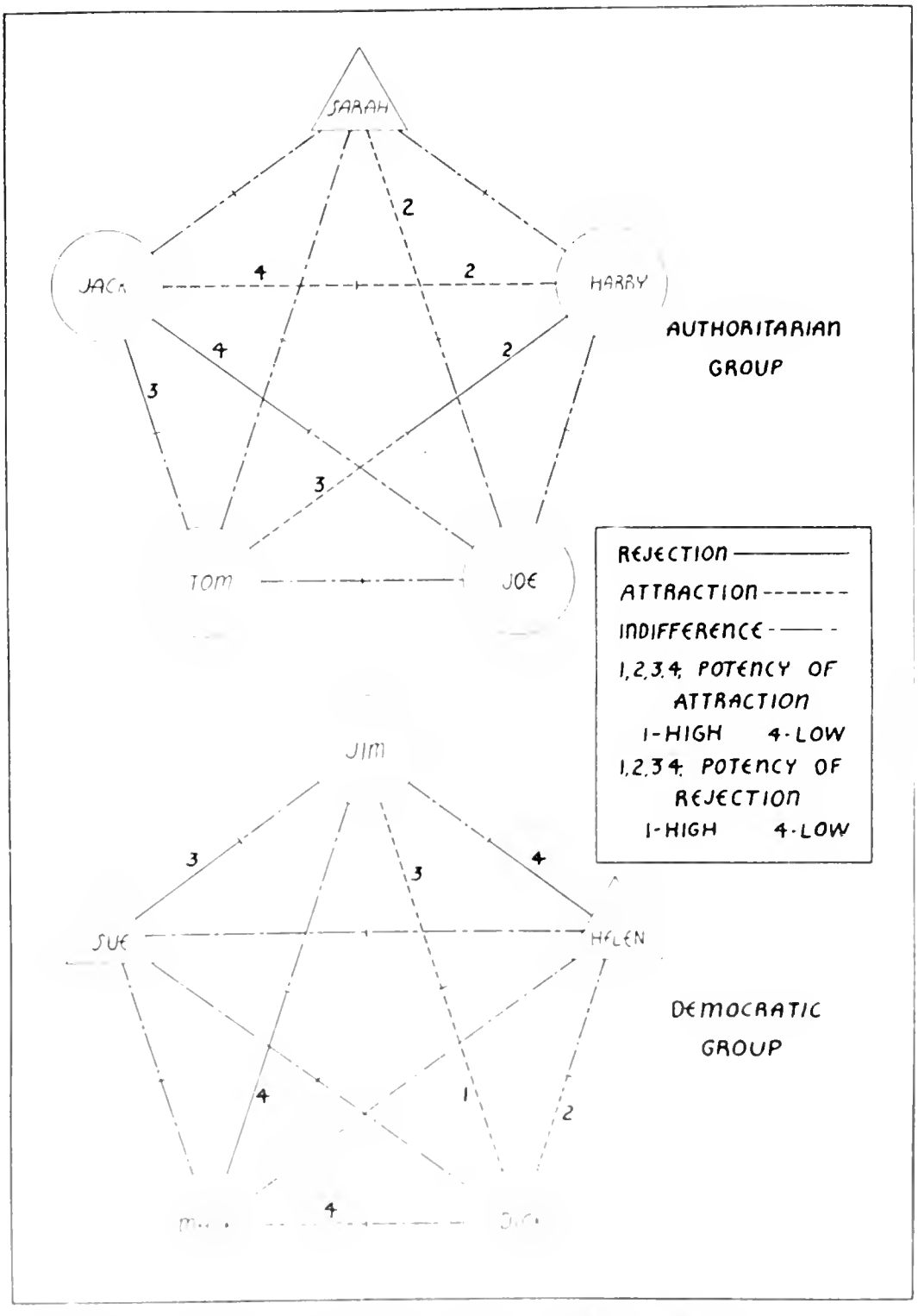


Figure 1. Classroom Interpersonal Relations of Club Members

The distribution of first, second, third and fourth choices is seen to be also roughly equivalent. Other, more refined methods, would certainly be desirable, but we have made at least one step toward equating the "social distance" relationships of our two clubs.

Functional Properties. — (1) Group goals: By asking the children, "Who would like to belong to a mask-making club?" the major activity goal of the two groups was set prior to the first meeting. Within the framework of this larger goal it was assumed that the differentials of autocratic and democratic procedure would function. There can be no doubt from the number volunteering and the spontaneity of interest in the project that "mask-making" was the central and potent goal of the two clubs as they came together to begin their meetings.

(2) Group ideology: This framework of values and attitudes is a specific function of every group in its own setting. The leader was present, moulding the history of the clubs from the very beginning and influencing them throughout their lives. Ideology is, perhaps, the factor which most of all is differentiated in group life by the authoritarian versus democratic way of life. This then is one of our chief variables and will be analyzed more fully below.

(3) "Style of living": Not only is goal-setting a major differential of democracy and authoritarianism, but so is means-behavior, the way of living. The democratic club member solves his immediate problem by thinking or by conferring with his fellow members: the autocratic member by dependence on the dictator. Therefore, we also consider "style of living" an important constituent of the democratic and autocratic method and have described the experimental techniques under these headings.

These three variables, group goals (within the larger equated goal), ideology, and "style of living" we have regarded in this study as all related to the single, more inclusive variable, democratic versus autocratic way of life. Following the analysis of the techniques of leadership and domination by Pigors, and keeping the framework of the functional group properties in mind, the investigator attempted to choose the major leadership (or dictator) techniques which would make possible a variation of the two club lives in the important factors of democratic and authoritarian organization. Obviously no harmful, destructive, dictatorial methods would be used which would betray the co-operation of the school. Impersonal firmness and follower dependence must be the case rather than overt hostility and fear. The adult must play a natural rather than artificial, "acting" role in creating the atmospheres. Previous experience in observing and leading a variety of boys' clubs and directing boys' club leaders helped the investigator considerably at this point. It is his belief (which will be objectively

checked by some of the statistical results) that the two club atmospheres contained, in an unartificial way, major distinctions between an autocratic and democratic way of life. The main differentiations of technique were:

Authoritarian	*Democratic*
1. All determination of policy by the strongest person (leader).	1. All policies a matter of group determination, encouraged and drawn out by the leader.
2. Techniques and steps of attaining the goal (completed mask) dictated by the authority, one at a time, so that future direction was always uncertain to a large degree.	2. Activity perspective given by an explanation of the general steps of the process (clay mould, plaster of Paris, papier mâché, etc.) during discussion at first meeting. Where technical advice was needed the leader tried to point out two or three alternative procedures from which choice could be made.
3. The authority usually structured autocratically the activities of each member — the task and with whom to work.	3. The members were free to work with whomever they chose and the division of tasks was left up to the group.
4. The dominator criticized and praised individual's activities without giving objective reasons, and remained aloof from active group participation. He was always impersonal rather than outwardly hostile or friendly (a necessary concession in method).	4. The leader attempted to be a group member in spirit and in discussion but not to perform much of the actual work. He gave objective praise and criticism.

With this major variable of the social atmosphere defined we may turn to a consideration of the remaining constituents.

The Position of the Group in the Larger Social Field

The club lives were of course inextricably bound up with the lives of the home groups, recreation groups, and, most of all, the classroom groups. Excited plans for a school assembly program

sometimes tended to usurp the club conversation, or a promise to help the teacher might require some member to leave early. All of the children stayed at school for lunch and then ordinarily had half an hour or more to amuse themselves. Each club met twice a week during this half hour. After observation, the teacher-child relationships and degree of freedom of the two classrooms were judged to be for all practical purposes equivalent, the philosophy of the school system being rather clear-cut in this regard. Questioning revealed that there were no friendships existing between members of the two groups which might influence the ideology of one or the other club. To organize the democratic club in a fashion similar to the school atmosphere and the autocratic group in a quite dissimilar manner would have been to create differential influences of the school groups upon the club atmospheres. The attempt was therefore made to have the authoritarian atmosphere as much more autocratic than the schoolroom as the democratic one was freer than the schoolroom. As a privileged club each group stood in a similar relationship to the whole classroom. The relationships of the individual members to these overlapping influences were of course different.

Individual Characteristics of the Members

Such variables as age, intelligence, and sex have much less weight in an investigation of this type than the actual social relationships — hostility, leader prestige, unity of interest, etc. — which make up the group constellation. We cannot disregard them, however. A much older, physically stronger boy or a very dull member would probably alter the atmosphere considerably. It will be seen from the tabulation below that no serious deviations of IQ, chronological age, mental age, or sex existed between the two groups. The same

Child	*Chronological Age*		*Intelligence Quotient*	*Mental Age*	
	Years	*Months*		*Years*	*Months*
			Fifth Grade (A Group)		
Joe	10	9	136	14	7
Harry	10	9	127	13	7
Tom	9	11	124	12	3
Sarah	9	10	120	11	10
Jack	10	7	101	10	8
Mean	10	4	121.6	12	7

SIXTH GRADE (D GROUP)

Mack	10	9	130	11	0
Helen	10	11	117	12	11
Dick	11	0	116	12	10
Sue	10	11	116	12	7
Jim	11	9	99	11	8
Mean	11	0	115.6	12	9

is true of physical stature. After observation, in the school play situation, it was thought that inclusion of two girls in one group and one in the other would have little effect at this level upon the processes of group life under consideration. Subsequent observations in the club upheld this opinion. At a later age the number of group memberships often tends to vary greatly for a given group of children, but interviews with these ten- and eleven-year-olds revealed a surprising sameness in their group memberships. With one or two exceptions, equally true for both clubs, we may roughly generalize these connections as: (1) a home of good socio-economic status, few siblings, and consistently moderate discipline; (2) an unorganized neighborhood play life with no hint of gang membership; (3) rather inactive membership in a Cub pack; and (4) membership in a progressively inclined university school system. A much more thorough study of the differential effect upon behavior, in the club situation, of differing home memberships is under way at the present time.[4] More information as to the relative potencies in a particular life situation of these overlapping group memberships would answer many of the questions of character education, mental hygiene, and social work. In the opinion of the present investigator these variables have not seriously affected the factors of group life which have been analyzed in this study.

The Physical Setting

A project room with sink and running water, plenty of floor space, and locker room was available in the school building for all of the meetings of both groups. About half of the room was all that was needed for the club activities. A table was arranged in the other half of the room behind which the observers sat. Most of the work was done on the floor, which was covered each time with newspapers.

The Nature of the Group Activity

The activity of making theatrical masks was decided upon *a pri-*

[4] A co-operative study of four clubs by R. K. White and R. Lippitt

ori, as was mentioned, and the club was introduced to the children as a mask-making club. This activity had several things in its favor. It was new and attractive to all the children. It offered a variety of subactivities which could be either co-operative or individualistic. It could be broken up into several rather clear-cut units — designing, mixing clay, moulding, mixing plaster of Paris, pouring the cast, etc. — which could be carried along in parallel fashion in the two groups. But what of the democratic group? Were they not free to introduce variations in group life? They were. For this reason the democratic group always met first (Monday and Wednesday) and the autocratic group second (Tuesday and Thursday) so that variations which appeared in the group life on Monday could be dictated to the autocratic group on Tuesday. In this way an activity parallelism was maintained.

Summary

Briefly then, an attempt was made:

1. To insure an equivalence between the original structural properties of the two groups by a study of the interpersonal relationships and stratifications existing between the children to be chosen for club membership: utilizing the sociometric technique, playground observations, and teacher interviews.
2. To be assured that there were no important differences as far as we could tell in the position of the clubs in the larger social field, with special attention to the characteristics of the two schoolroom atmospheres.
3. To be reasonably certain that no serious deviations existed in the backgrounds and individual characteristics of the personnel of the two clubs by a study of school records and brief child interviews.
4. To provide a physical setting conducive to unartificial, spontaneous club life.
5. To find an interesting group activity which would leave enough freedom and variation to bring to the foreground the essential social characteristics of group life.
6. To vary in a describable manner the functional group properties (goals, ideology, "style of living") by differentiating between an authoritarian and democratic way of club life.

Problems of Data Collection

The introduction of observers into the club situation required

careful study. Discussion with the teachers revealed that the children in the university school were conditioned to a constant flow of observers. It was their belief that the children would remain oblivious to onlookers in the clubroom. The three or four observers grouped themselves around the table at the further end of the room and seemed to be more completely out of the situation by their grouping and preoccupation with their papers than one isolated person would have been. At first the club activities were arranged when possible so that the children's backs were toward the observation table. This was soon seen to be entirely unnecessary. The club was oriented to the presence of strangers in this fashion, "There will probably be people over in the other part of our clubroom quite often who are interested in seeing how a good club runs, just like they come to see how your schoolroom runs. They'll have plenty to do and so will we; they won't bother us and we won't bother them." It was rather amazing to the experimenter to find the teachers' observations completely upheld. Except for one or two incidents which were of considerable interest and value in themselves it was as if the observers were in another room. This possibility of unself-conscious observation has been borne out in our second more elaborate effort at observing ten-year-olds in action. Several visitors remarked about the complete spontaneity and naturalness of the situation, the children, and their relationship with the adult leader.

Observation Techniques

During the early stages of the experiment, the observation techniques were constantly being studied and refined, but with most of the criteria of observation being held constant so that the major strands of data would be comparable throughout. It was not our main purpose to make the techniques and data independent from the observers, as has so often been the aim. We wanted reliable, valid data, but we were not willing to sacrifice the skillful interpretive abilities of four graduate students of child psychology for complete reliability of observation on insignificant items of behavior. Whether one child's social approach to another was ascendant or submissive was not an automatic decision related to a rigid, minutely organized set of criteria. It was an act to be seen in its total context and interpreted to the best of the observer's psychological insight, aided by criteria derived by previous researches. The functions of the observers may be summarized as follows:[5]

[5] For more complete account of observation techniques, see Appendix.

Social Interaction Analysis. — This consisted of a quantitative running account, using symbols, to record the social interactions between the particular group members in terms of:

1. Initiated ascendant approaches and noninitiated ascendant actions. Ascendance, as determined by the general criterion of "directing the behavior of another" includes a wide scope of qualitative differences in this study (See Appendix.). It is not synonymous with "domination of behavior."

2. Initiated submissive approaches and noninitiated submissive actions.

3. Initiated objective, "non-ego-involved" approaches, and noninitiated objective actions. For the interaction accountist this category did not include all of the conversation. He included interpretation of conversation related to the work and club life, but not more general out-of-the-field exchanges.

4. Purposeful ignoring of a social approach — a refusal to respond socially when there were indications that the individual had comprehended the approach.

The observer also noticed in preliminary observation that social interactions in group life seemed to break up into rather natural "chains." A particular interaction chain seemed to end as the group or subgroup attention moved on to a new focus, leaving something settled, or still "up in the air." The observer therefore divided his running account into chains of social interaction. This is rather interesting from the point of view of methodology. The researcher soon finds, in studying behavior in a situation, that breaking his observations up into arbitrary time units destroys the meaning of some of the psychological facts he is studying. Barker and Dembo (2) found, for example, that in studying the psychological meanings of their frustration periods they had to define different types of psychological units (e. g., "unit of action," "segment of activity," "episode of behavior") which cut across actual time periods. To characterize a state of events at a certain moment it is not sufficient to consider only the time differential, as may be done in physics. One must discover the various sized psychological entities which are most meaningful for the particular analysis. Units of group structure and chains of interactions have something of this character in the present study.

Group Structure Analysis. — A club of five children is constantly combining and recombining into subgroups of different size and

number. One minute the whole five will be working as a unit to get the plaster of Paris distributed evenly over the mould; the next minute one member will have gone off to start some new project of his own and the other four will be discussing how soon the plaster will be dry; before long two will be painting, two will be mixing papier mâché, and the fifth will be asking advice of the leader. Behavioristically we might record activity subgroupings, conversation subgroupings, or geographical (physical togetherness) subgroupings. All are obviously related in many group situations. The most meaningful criterion for our analysis seemed to be activity group structure. Using a combination of symbols and running comments the group structure observer recorded:

1. Activity subgroupings in terms of who was working with whom
2. The goals of the subgroups
3. Comments as to whether the particular subgroup was initiated by the experimenter or spontaneously formed
4. Ratings on a five point scale of the interest and unity of these subgroupings

Member Activity Analysis.— All of the items of this technique did not remain constant throughout the experiment. There was a great deal of revision to avoid too much overlapping with the other observers. We do have, however, as a result of these observations:

1. Running comments on individual's excursions in and out of the field of club activity
2. Ratings of an individual's shifts of interest and comments on his changes of goals

Stenographic Record.— A stenographer was secured who could rapidly and accurately identify and record the conversational interactions of the group. It is obvious that the content of this account overlaps a great deal with that of the interactions analysis but has many other values as well. One sacrifice had to be made to reliability here. The stenographer found that following the leader made it impossible for her to record adequately the verbal interchanges of the five children. Therefore the remarks of the leader had to be omitted from the stenographic record. They were given special attention by the recorder of social interactions who added qualitative comments concerning the leader's activities from time to time as well as recording them in the more objective fashion. A number of analyses of the stenographic accounts were made by the investigator. They will be discussed in the section on results.

Leader's Diary.— After the club meeting the experimenter wrote up his "group-as-a-whole" impressions and added an interpretation of special incidents which had attracted his attention.

Timing of Observations.— An electric clock on the wall beside the recorders made contact to sound a telegraph key every minute to synchronize the observations of the different observers at these intervals. Long strips of polygraph paper were ruled out beforehand into thirty blocs, one for each minute. When the click sounded the observers moved down to the next unit on the paper. In the process of analysis the rolls could then be pasted together so that all the observations for a particular minute were side by side. The picture below of two minutes of observation will give the reader some idea of the materials the investigator had on hand to tabulate and interrelate.

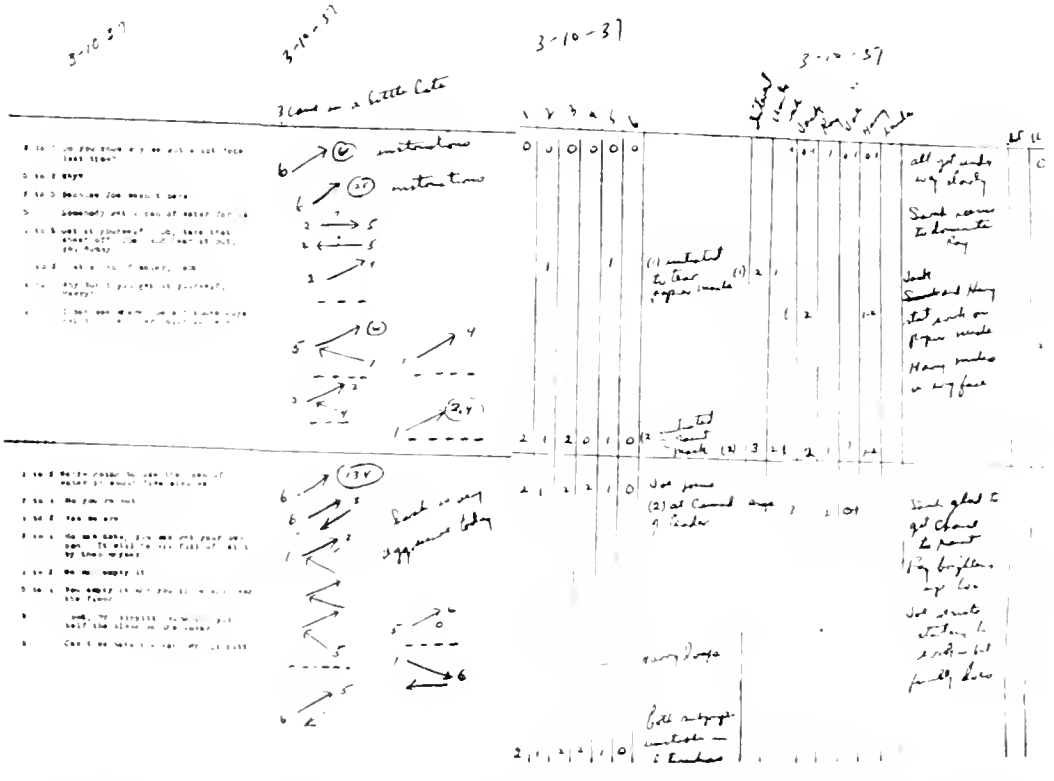


Figure 2. Sample Records (reading left to right) of Stenographic Observations, Social Interactions Analysis, Group Structure Record, and Individual Behavior Record for Two Minutes of an Authoritarian Club Meeting (See Appendix, p. 305, for Explanation of the Symbols.)

Reliability of Observations

The training of new observers who would use the same techniques simultaneously to test the reliability of our observations would have been a rather difficult but desirable step. The experimenter

was already receiving a maximum of co-operation from the staff of the Iowa Child Welfare Research Station and unskilled observers would have been of little help. One rather indirect check on reliability did present itself when the analysis of the conversation records had been completed. A number of separate items (e. g., hostile criticism, unfriendly actions, dominating behavior, etc.) had been tabulated quantitatively. These seemed collectively to meet the criteria of ascendant behavior which the social interactions observer had used. Obviously this latter observer had included in his account action interrelationships (e. g., threatening gestures) as well as verbal interactions. A second difficulty was that exact items of agreement and disagreement could not be tabulated. A minute-by-minute comparison could be made, however. Agreements in observation have been defined then as the highest common number of ascendant behaviors recorded by the two observers in the same minute. Items of disagreement become the number of items more of ascendant behavior recorded by one observer than by the other in the particular minute. As it is clearly unfair to the stenographer to be checked in this manner against the more inclusive interactions account the investigator offers the following coefficients of reliability with some hesitation:

$$\text{Formula} = \frac{\text{Number of items agreements} \times 2}{\text{Total number of items}} = \text{coefficient of reliability of observation}$$

Date	*A Group*	*Date*	*B Group*
2-22 37	.82	2-23 37	.62
2-24	.73	2 25	.75
3-1	.71	3 2	.88
3-3	.85	3 4	.88
3 8	.86	3-9	.85
3-10	.79	3 11	.70
3 17	.87	3 23	.78
3 22	.75		
3-31	.87		
Means	.81		.78

In light of the difference of observational points of view under which the two series of data were collected and the fact that the reanalysis of conversational behavior from the records is open to error the investigator considers these coefficients quite satisfactory. An adequate parallelism is seen between the two sets of observations when the relative rankings of the members on ascendant behavior are examined for each meeting. A similar comparison can-

not be made on submissive and objective behavior because the components chosen for tabulation in the stenographic records do not parallel the criteria used in the interactions records. From much handling of the minute by minute agreements in the interrelations of the data on many aspects of the group life the investigator is of the opinion that the observations are valid in all respects in which they have been used.

Test Situations

An added source of valuable information which was not used adequately in this preliminary investigation is the setting up of a variety of group "test situations" by which to get certain indices of group attitude and behavior. By coming late, for example, the leader is able to test the independence and work-mindedness of the club members. By leaving for a ten-minute appointment in the middle of the meeting he may get an indication (through the observers' records) of the pressure which he exerts upon the atmosphere. In our later investigation we have also been rather successful in introducing a stranger into the situation (e. g., as an electrician to fix a light, or a janitor to take away rubbish) who, in the absence of the leader, would criticize the group's work. Will the group defend in united fashion the member who is criticized? Will they accept the criticism objectively or will they get angry? Will they "sass back" or will they wait till the stranger is out of the room before they burst loose? Will their efforts disintegrate into careless activity or will they redouble their efforts? These and many others are the interesting questions which may be answered by carefully planned test situations. Another deviation of a test nature in this study was the attempt by the leader to avoid any direct repression of "free speech" in the authoritarian group. If in some way the outlet of speech could be left at least partially open it was thought that much more significant observations into the dynamics of the authoritarian atmosphere might be secured.

Child Interviews and Questionnaires

The club members and their relationships are not exhausted as sources of information when the behavioral aspects outlined above have been recorded. Each child has attitudes, ideas, and opinions about the club and his fellow members which he is usually quite willing to reveal to a sympathetic interviewer who has his interests at heart and who has the power of "doing something about it." In

the present investigation only one series of interviews was held. Some time after the club meetings were over the experimenter talked with each child for about an hour about his attitudes toward the other club members and the club atmosphere, his comparison of the "strictness" of his teacher, parents, and club leader, his ideas of how an ideal club ought to run, etc. These will be reported later. This technique has also been much improved at the present time, and an added feature has been the introduction of little two- or three-minute rating scales and check lists.

"Total Behavior" Observations

The first purpose of these techniques of observation which have been summarized above is to record as fully and insightfully as possible the total behavior of the group. This is a distinct break away from the usual procedure of recording only certain symptoms which are determined in advance. It is an attempt to apply the same "total behavior" methodology in social psychology which has proved so fruitful in a number of investigations into individual psychology (i. e., Dembo's (11) study on anger, Karsten's (23) of psychological satiation, and that of Barker and Dembo (2) on frustration). It is a logical procedure for the field theoretical approach in social psychology. A second point to be stressed for analysis is that exact quantitative records become valueless if one loses sight of the meaning which the single action had within the total setting. An ascendant approach must be seen in relation to the in-group and out-group nature of the subgroupings, and these in turn must be seen in relation to the particular activity in progress, which is dependent upon its position on the path of the group locomotion toward a particular goal. It is therefore most important to have some complete characterization of the atmosphere as a whole. The necessary quantitative analysis (choice of items, classification of items, and statistical combinations) must be made in view of these larger wholes. It is the belief of the investigator at the present time that this "total behavior" technique, combining strands of all degrees of quantitativeness and qualitativeness offers the most hopeful methodology yet developed for the experimental study of group life. The possibility of focusing numerous pieces of evidence upon one or two focal points corrects to some extent the necessity of working with such a number of variables as the social situation presents.

Group Mathematics

An interesting set of problems arose in the statistical analysis of the data on social interactions which has led to the development of an embryo "mathematics of group life." As each social interaction was tabulated it was studied in relation to the group structure account and thus recorded as to whether it took place between two members of the same subgroup or whether it took place between members of different subgroups. Analysis of the differences between the in-group and out-group interactions could then be made. It became obvious that before statements could be made about the relative amount of interactions between members of in-groups under various circumstances or between members of out-groups, it was necessary to take into account the possibilities of in- and out-group communication in each type of group structure. For example, it was clear that if all members were working on isolated individual bits of activity there could be no in-group relationships, for no subgroup would have more than one member. If all five children were united in one activity unit there would be no possibility of interactions with an out-group member. In case the total group were divided into two subgroups these interaction possibilities would be different in case the two subgroups contained four and one children, or three and two children. It is necessary then to compute the possibilities of in- and out-group communication for each possible group structure. In case the total group contains five members, as in our case, the following seven group structures are possible:

5, 4-1, 3-2, 3-1-1, 2-2-1, 2-1-1-1, 1-1-1-1-1

The formula for computing in-group interactions possibilities (ip) and out-group interaction possibilities (op) for any given group structure may be stated simply:

$$ip = a(a-1) + b(b-1) + \ldots .r(r-1)$$
$$op = m(m-1) - ip$$

where a, b, . . . r are the number of members in the various subgroups coexisting in a particular group structure and where m is the total number of members in the group. In our case we find the following interaction possibilities:

Possible Group Structures

	5	4-1	3-2	3-1-1	2-2-1	2-1-1-1	1-1-1-1-1
ip	20	12	8	6	4	2	0
op	0	8	12	14	16	18	20

Weighting these possibilities by the time that each group structure existed we get an index with which to measure the relative in-group, out-group, and total social interactions in the two group atmospheres. We can use the following formula for the total in-group interaction posibilities (Σ ip) during a given period of group life:

$$\Sigma \text{ ip} = \text{ip (A)} \cdot \text{t(A)} + \text{ip(B)} \cdot \text{t(B)} + \ldots + \text{ip(L)} \cdot \text{t(L)}$$

where A, B, . . . ,L are the various types of group structure which came up during that period of group life, and t(A),t(B), . . .t(L) are the durations of each group structure, and ip(A), ip(B), ... ip(L) are their in-group interaction possibilities. The total out-group possibilities (Σ op) is:

$$\Sigma \text{ op} = \text{op(A)} \cdot \text{t(A)} + \text{op(B)} \cdot \text{t(B)} + \ldots + \text{op(L)} \cdot \text{t(L)}$$

The total interaction possibilities (Σ sp) is:

$$\Sigma \text{ sp} = \Sigma \text{ ip} + \Sigma \text{ op}$$

For example: If, during a certain club meeting the structure was 4-1 for five minutes, 3-1-1 for ten minutes, and 2-1-1-1 for ten minutes the formulation of the index would demand this computation:

$$\Sigma \text{ ip} = 12 \times 5 + 6 \times 10 + 2 \times 10 = 140$$
$$\Sigma \text{ op} = 8 \times 5 + 14 \times 10 + 18 \times 10 = 360$$
$$\Sigma \text{ sp} = 140 + 360 = 500$$

We are now able to weight our raw data to give the relative number of interactions per unit of time for in- and out-group relationships or for the total group interactions. In this way also it was possible to correct for differences in group structure possibility due to an occasional missing member.

Further calculations, such as the use of the "average member" and "ideal average member" as the normative bases upon which to compare leader-to-child, child-to-leader, and child-to-child behavior will be explained later in connection with the tables where they appear.

GROUP LOG

To characterize these two clubs with statistical tables and graphs is disheartening, no matter how many facets of group life we may have portrayed in that fashion. What were the actual things the children were saying? Did they really sound spontaneous? How

do they compare with the children's groups that have come under the observation of the reader? Even to get the best perspective for appraising the quantitative results summarized in the succeeding section the clubs should be seen in action. As the best substitute for real life observation the attempt has been made here to present a series of "action snapshots" of the group in progress. Data from the leader's diary, supplemented by the stenographic record, have been the basis of these excerpts. The attempt has been made to give the reader an impression of the developmental aspects of the two club lives as well as to point out incidents of particular interest for later analysis.

Getting Organized

"Met the children who stay for lunch in the sixth grade today. There were about a dozen club volunteers from whose names have been picked the best five members for the purposes of what preliminary equating could be done. Announced the personnel of the club to the children, naming a couple of alternates. There were a number of suggestions that the club be made larger to which I had to reply that this kind of a club was just large enough for five members. Chatted with the five children about ten minutes. They decided that Monday and Wednesday would be the best days for meeting. I think they got the two main ideas clearly, (1) we would make masks out of "plaster of Paris and things," and (2) the masks would belong to the club as a whole for them to do with as they wanted.

Group goal and common property stressed

"Met the eleven fifth graders who stay for lunch. The regular club members and alternates were announced and there seemed to be even more enthusiasm than in the sixth grade. Discussed briefly the fact that masks like this were usually used to hang on the wall, and that ours would belong to the whole group when they were done. One boy couldn't come on Friday so Tuesday and Thursday were the days set. This means that they will be the authoritarian group because we want their meetings to follow the democratic ones for purposes of 'activity equation.'"

Authoritarian and democratic clubs selected by "chance"

First Meetings

Democratic Group

All are on time and eager to begin. Mack fools around with the faucet a few moments while the others wait for him to sit down. Sue and Dick hardly need the suggestion that putting some paper on the floor would

keep clothes from getting dirty. It is spread down quickly. All are soon seated on the floor.

Leader: "There'll probably be people here quite often to see how a good mask club runs, just like they visit in the classroom. They'll have lots to do and so will we. We won't bother them and they won't bother us."

The place of the observers in the "psychological field"

Dick and Helen look at the observers and smile. Nods seem to imply that the situation is clearly understood and quite the usual thing. No further attention is paid to the observers.

Leader: "Well, Dick, what's your idea of what the club ought to do?"

Dick: "I don't have any ideas yet."

Jim: "I know it's going to be a lot of fun. I wonder if we couldn't make an Indian mask to hold a ball of string."

Starting the process of group decision

Mack: "We might make a skull and crossbones."

Dick: "Yeah, that would make a swell mask."

Helen: "Maybe a pirate would be nice. We're studying about *Treasure Island*."

Dick: "How big would they be? Are they out of clay or what?"

Leader: "Would you like me to give you a little idea of how they generally make masks?" (All nod.)

All listen quietly as the leader gives them a general outline of the big steps in making a mask — the clay mould, plaster of Paris negative and papier mâché positive which would be painted. Sue shows a special interest in the papier mâché and wants to know if it is like the masks in the store. Dick asks if we could make animals the same way and the leader tries to explain the difficulty, but possibility, of making two halves of a mould and putting them together for an animal.

Structuring the future; building group independence through time perspective

Dick: "Shall we work together or separately?"

Leader: "There are quite a few things to be done on a mask. Don't you think it might be a good idea if we tackled one at a time?" (nods)

Jim: "We're only going to make five, aren't we?"

Leader: "I should think we ought to leave that up to the club."

Mack: "I think we better just make a plain man first."

Discussing possible group locomotions

Dick: "A beard would be pretty hard to make, wouldn't it?"

Leader: "Well, we've had three suggestions so far, an Indian, skull and crossbones, and a pirate."

Mack: "A skull and crossbones would be too hard." (It had been his suggestion.)

Dick: "Let's make the pirate."

Leader: "Shall we draw both of them and see which we want?" — Testing alternatives, spontaneous subgrouping

Dick to Jim: "Let's us draw the pirate."

Mack joins Jim and Dick and persuades Jim to work on the skull and crossbones. Dick decides he'll work with Sue and Helen on the pirate. Helen seems to be the most active in the latter group and Jim in the former. Jim and Mack joke over the kind of teeth to put in a skull and get a black crayon from the other subgroup. Dick looks over and jeers their effort in a friendly way. Both groups keep up a work-centered conversation of suggestions and alterations for the two drawings. Sue calls over to the leader, who is talking to Jim and Mack, to ask if she is doing all right. Dick is now most active, with Sue and Helen giving suggestions freely. — A friendly work atmosphere

Mack to Leader: "This doesn't look so good, does it?"

Leader: "Oh, I don't know."

Dick: "Hey, how about the red crayon over there." (They hand it over.)

Jim and Mack sit back and watch the other group drawing, then start to work again.

Mack: "Is this every Monday and Wednesday?"

Sue: "Sure."

Sue pokes fun at the bones in the cross and both Jim and Mack laugh, but appear a bit disconcerted at their effort. Are not working as intently as before.

Leader: "Well, shall we decide which one to work on next time?" — Suggesting a group decision

Dick (laughing): "Mine's best."

Helen: "You mean *ours*." — Distinction of "we-centeredness" and "I-centeredness"

Mack: "How could we make the mould of the cross bones with the skull?" (Leader explains briefly.)

Leader: "O. K. All in favor of the skull and crossbones."

Only Jim votes "yes" and Dick laughingly pulls down Jim's arm. The others all vote for the pirate. — Democratic decision

Jim: "Let's start."

Leader: "There's only ten minutes left. We wouldn't have time to get the clay mixed."

Dick: "Let's draw something on the other side of the papers. Let's see you draw an engine" (to Mack who has evidently had some extra art instruction).

Dick, Jim, and Mack all start to draw with the crayons as Sue and Helen look on. Helen talks to leader about what they will do next time. She seems to want to be sociable and begins to talk about her teachers and the lessons she has to do at home at night. Dick becomes peripheral to the drawing also and makes a joke at Jim.

Minority acceptance of group decision

Mack: "Lookit, how's that?" (Picture of Popeye)
Jim: "It looks just like you."
Sue: "We could make that snake, couldn't we?" (Jim's drawing)
Jim (enthusiastically): "I'll bet we could."
Leader (getting up): "Guess we'd better save these papers, hadn't we?"
Dick: "Be sure and save mine." (The pirate drawing which Helen had insisted was "ours.")

Helen begins to pick up the crayons and, at a suggestion from the leader that the papers need to be picked up, Dick quickly volunteers. Dick, Sue, and Helen all clean up as Mack sings, "a la Popeye."

Spontaneous clean-up

Jim: "Can we come early next time?"
Leader: "I don't believe we can get started much before 12:30. You need a little while to eat anyhow."
Sue: "Oh, let's work all noon."
Leader: "Sometime maybe, but let's just meet at 12:30 for awhile."

Authoritarian Group

The leader was anxious not to start out too rigidly, but to get some idea of the common starting point of the two groups in spontaneity, constructive suggestions, etc. On the other hand, he could not be completely democratic for one meeting and then suddenly change. This inconsistency might then be the cause of any social resultants, rather than a difference in the two methods. A middle path was attempted of being firm and decisive, but at the same time giving an opportunity for individuality to emerge.

"Semiauthoritarian" beginning

Sarah and Joe put the paper down at the leader's suggestion. Tom and Jack get down on their knees to read a comic strip.

Leader: "When you're through with Popeye we'll all sit down here to talk things over. Before we get started there are several things I want to say.

Firmer, "leader centric" approach

The same explanation of the presence of visitors is given and meets with an unconcerned response after a moment of frank inspection of the observers.

Leader: "Now we've got to decide what mask to start on. There's enough work on one mask to keep everybody busy so we're going to make one at a time. What ideas do you have about the first face we want to make?"

Harry: "Let's make George Washington, his birthday is coming pretty soon."

Jack: "I think we ought to make a pirate with ear rings."

Tom: "Here's a picture (in the paper on the floor) of President Roosevelt. How about making him? Or some other president?"

Leader: "All right, there's some suggestions. Two are enough to start with. Sarah and Jack start on some president, and the rest begin on a pirate. Here are a couple of books of pictures if you need any more help. Here's some paper and crayons." — Inducing goals and initiating structure

Jack: "Can we draw this?"

Harry: "Here's a picture of James Madison."

Sarah: "Let's make that one (Madison), Jack. You don't have to use any certain color, do you?" — Beginnings of leader dependence

Leader: "No."

Harry: "Do you have the red?"

Joe: "No, I don't."

Jack: "Here's the red, it sure is."

Tom: "Captain Blood was very handsome. Did you see that movie? You be the lady (to Joe) and I'll be Captain Blood. I could draw a mask of him, I guess."

Tom talks at some length about the deeds of Captain Blood. There does not seem to be any great impetus to co-operative drawing in these arbitrarily structured groups. Sarah and Jack work on the same sheet but draw two different pictures. The other three are on the second piece of paper, but Tom draws Captain Blood while the other two seem to be making an Indian.

Jack: "Here's a good face."

Leader: "That's not bad." (He walks from one to the other to inspect the progress.)

Jack: "Gee, this is terrible now. Lookit, I'm going to draw a red feather. I forget how to draw a good face." — Spontaneous self-criticism

Jack begins to draw a feather, Tom starts over again, and Sarah draws silently.

Tom: "Chinese eyebrows arch, I guess?"

Leader: "Chinese eyebrows are this way. There, that's more like it."

Tom: "How's this?" He is a royal Chinese pirate. I saw 'China Seas.' It was a good movie. I think I'll draw Mussolini next."

Joe: "He isn't worth drawing."

Tom: "How is this for Mussolini?"

Harry: "Looks a little too good for him. Yes, just a little bit too good."

Leader: "All right, let's bring our papers over here."

Sarah: "I don't think we have any that are very good. These are Tom Sawyer crayons, aren't they? Wait till I get mine put away." — Leader decision rather than group decision of group locomotion

Leader: "Let's see what we have here (spreading drawings in front of him). This might not be so bad for a cast. I think it's between these three here," (Two pirates and Washington profile)

Tom (grinning): "Two of 'em are mine."

Sarah: "I think that would be the easiest" (profile).

Leader: "This is the one we'll do (Chinese pirate). I'll bring the clay next time and we'll get started."

Joe: "What do we do with the clay?"

Leader: "That's one of the steps we do to make the final mask to paint. I'll tell you how when we're ready to do it. There's the bell. I'll see you all on Thursday." — Keeping the future unstructured

Joe and Sarah join the leader in picking up the paper before leaving, although the bell has rung.

First Clear Signs of Group Difference

Democratic Group, Second Meeting

Dick is absent from school and from the club meeting. The rest are all waiting promptly at 12:30.

Leader: "We've got the clay here to mix today, and I brought a board I thought we could fix up to put the mould on. Sometimes they pound a few nails in the board to hold the clay better."

Helen: "How do we fix the clay?" — Independent (of the leader) co-operation and spontaneous subgroup structure

Mack: "There's a lot of directions on the box."

Sue: "How about some of the boys pounding the nails? I'll help mix the clay."

Jim and Mack take the board and hammer while Sue, Helen, and the leader get out a pan for the clay and read the directions. Sue notices that the paper isn't on the floor and gets Mack to help her put it down. Helen stirs actively at the clay and asks the leader's opinion about her progress. Jim goes to help Helen mix the

clay and Sue joins Mack at fixing the board. They carry on a steady conversation about the pirate picture. Both subgroups are working busily; the clay mixers seem quite dependent upon the leader.

Jim: "I think that's thick enough now."

Helen: "I don't think so. We've got to get all those lumps out too."

Sue: "How do you think this board is now, Mr. Lippitt?"

Leader sugges tions make the members equal partners in planning and deciding

Leader: "Fine. Do you think there ought to be a couple of more nails there in the center?"

Sue: "What do you want?" (In aggressive tone to girl who puts her head in the door)

Mack: "Can't come in while we have our meeting. Goodbye."

Mack jeers a bit unkindly at Sue's pounding ability but she ignores him.

Helen: "What shall we do with it now?"

Leader: "Is it all mixed?"

Mack: "Darned near it."

Leader: "Well, there are at least two things we could do while the clay dries out a little bit. We could color our pirate the colors we will want to paint him later, and we could start tearing up the rags and paper for papier mâché. Maybe you have some other ideas."

Alternative activity paths are structured; activity time-perspective stimulated

Jim: "I'll start on the papier mâché."

Mack: "No, let's do coloring."

Jim does not reply as the leader explains further the process of making papier mâché. Jim repeats that he is going to start tearing the rags and Mack decides to join him. Helen asks for ideas about what colors to use on the mask picture and both Jim and Mack volunteer their suggestions. A long discussion about whether or not the brown wrapping paper is the right color for the pirate's skin follows. Sue quizzes the leader about what kind of boards he is going to get to make the sides on the mould and offers to bring some from home. Jim criticizes Sue's choice of color, and she challenges him to try and do a better job. Helen remains silent, but makes some good additions to the coloring of the hair. She laughs at the "bloodshot eyes" she has made for the pirate.

Helen: "What is papier mâché like when it's done?"

Mack: "It's like what it's like."

Helen: "That's very rude."

Leader explains the process more thoroughly and Mack keeps on interjecting comments.

Helen: "What are we going to do next time?" — Very "we-minded" planning
Mack: "We want to make the clay face."
Helen: "We want to do a good job of that."

Jim and Helen both ask what the other club is making. Leader is non-committal but they insist on knowing. He says they are making a different kind of a pirate mask.

Leader: "I guess we ought to get cleaned up by 1:00."

Sue and Jim join the leader in cleaning up papers. Helen comes over to help. Mack keeps on tearing cloth. He is the last one to leave, putting away his work as the others go out.

Autocratic Group, Second Meeting

Leader: "All right, we'll start on this pirate." — Conflict of *own-* and *leader-induced* goals
Tom: "I thought we decided to do the other one" (his pirate picture).
Leader: "No, this is the one I decided last time would be the best one."

A new boy (one of the two alternates for club membership) enters and looks at the leader in rather abashed fashion, then goes over to Tom.

Tom: "I told Ray to come up. We can have six members, can't we?" — Conflict of *own-* and *leader-induced* goals
Leader: "No, I'm afraid not."
Tom: "Why?"
Leader: "Remember I told you before, when you were there too, Ray, that we just had room for five people in the mask-making clubs — just enough for five people to do. I'll let you know later if we have room for any more, Ray. (He leaves.) Now, we've got several things to do. First of all we need to have several rows of nails pounded into this board." (Notice difference in method in not giving any more than the immediate goal of the activity.) — Member's goals for next step induced without giving time-perspective

Tom, Joe, and Harry all volunteer eagerly and the leader gives the job to Jack and Harry, giving them explicit directions; he tells Sarah, Tom, and Joe that he has something else for them to do and they discuss the box of clay in the meantime. Tom and Joe seem to disagree. Tom and Sarah side with each other. Leader comes over and gives directions to other three now about mixing clay. Tom seems to be a bit sulky because he didn't get to do the nailing. Sarah and Joe both read the directions on the box aloud as Tom loafs. Tom and Jack have a pantomime combat with the hammers until — Subgroup structure is leader imposed

leader orders Tom to help on the mixing. His pout seems to wear off as he gets to mixing the clay.

Leader: "One more thing, the pirate drawing needs to be colored the way we're going to have it painted."
Harry: "I will."
Sarah: "I know how to color it."
Jack: "Sure, you color it, Sarah."
Sarah: "I guess maybe I don't know how."
Joe: "I don't either."
Tom: "I can do it."
Leader: "Joe is going to do it. I'll tell you how. Color this a sort of brownish yellow, make these blacker, and fix up the nose."

Leader-induced goals are accepted quite often

Sarah adds some suggestions and Tom comes over as though to start coloring also but is ignored. Jack is still pounding nails. All join in giving suggestions to Joe as to what color of crayon to use.

Joe: "How will we color the real mask?"
Leader: "With water colors."
Sarah: "What do I do now?"
Joe: "I guess this is a mighty fine job I'm doing" (loud voice).
Tom: "Shut up."

Bid for group status via work recognition; Tom proves a barrier

Joe and Tom are left to the coloring as the leader instructs the others about the proper mixing on the clay. Sarah, Jack, Harry, and the leader seem to form a friendly, interested group. Leader makes corrections and gives instructions quite frequently. Harry threatens to drop a pan of clay and water on Tom. He returns the threat. Tom says he is going to help Harry stir the clay. Harry objects to his help, but accepts it with a disparaging remark or two.

Social frictions develop

Leader: "Sarah and Jack, you can take this cloth now and begin to tear it into little strips about this size."
Sarah: "What's this for?"
Leader: "It'll be papier mâché for the mask."

Attempts to structure the future are barred by the leader

Tom plays mud-pie fashion in the clay mixture. Harry washes his hands. Joe asks if he may help with the clay and gets permission. Two children look in and Sarah and Jack repulse them with comments of "not wanted." The bell rings.

"Out-groupers" are unwelcome

Leader to Joe: "Put the crayons away."
Joe to Tom: "You put them away; you dumped them."

Clean-up is no

Sarah to Joe: "I think you did." — longer spontaneous, but has negative valence

Leader to Joe: "Joe, you put them away."

Tom to Joe: "You ought to pick up some papers; you're just playing."

Jack: "Yeah, I'll say he is."

All busy themselves cleaning up under leader's instructions. Harry jostles Sarah who seems to enjoy it. Joe complains that now nobody is helping him. Tom leaves first, then Sarah. Jack chases Joe out, laughing. The diary comments, "Although the period as a whole was quite work-minded, there were a number of little outbreaks of irritation, especially between Tom and Joe who were, before the meetings, rated as the two leaders of the group. No lines of hostility are sharply defined; the outbreaks seem to be against whomever the situation warrants." — Development of "blaming reactions" forecasts scapegoat situations

The Hostility Polarized

Autocratic Group, Fifth Meeting

During the third and fourth meetings the members become more and more dependent upon the leader for their work progress, but tend to wait to be instructed rather than to ask. Sarcastic comments, thrown out hit or miss whenever the situation offers, seem to indicate the continued and perhaps growing presence of some sort of feeling of dissatisfaction. The activity still appears to be interesting for all of them.

Before this meeting began, an incident occurred which probably had considerable importance. One of the classrooms was preparing a party and had the little paper dishes filled with candies and cakes arranged around the ledge on one side of the room. Just before the leader's arrival, Tom evidently had sampled some frosting from one of the cakes. The teacher had just walked in and had seen him. He was thoroughly called down and told to come in and see her after school. The other children arrived to hear the end of her conversation.

Leader: "All right, let's get things put on the floor." — Socially, Tom becomes "figure on ground"

Harry to Tom: "What did she say to you?"

Tom: "Come in at 3:30."

Joe: "I couldn't see where you took it off. Well, I hope you have to do something you don't want to."

Leader: "This papier mâché is a little soft yet; and needs to have a few more layers. Here, Jack, you and Tom put some more cloth on it." — Leader induction behavior now the regular "style of living"

Jack: "Right on top?"

Leader: "Yes. Somebody can unwrap these new paints. We'll need them pretty soon."

Harry: "I will. Boy, here's a crumb of cake."

Sarah was singing to herself in a sort of monotone as she put down the paper. Tom seems to still be preoccupied with the thought of having to go in after school. The leader is attempting not to push things too much in getting them down to work.

Leader: "While that papier mâché mould is still soft we'll start work on the Indian. Here, Tom, take off a large piece of that paper."

Tom: "About like this?"

Leader: "Yes, that's all right. Joe, you work with Sarah on the Indian."

The members have become dependent on the leader for minute details of action

Harry: "How about the clay?"

Leader: "It's O. K., we'll have to wet it a little bit to mould it again."

Tom: "We ought to put some more nails in it, don't you think?"

Leader: "No, there are enough."

Harry: "Yeow, ow!" (As he sees some little silver fish crawlers come out from under the clay mould.)

Diary—"Yelling broke out in semi-hysterical fashion and everybody continued for ten or fifteen seconds before the leader's 'exaggerated patience' and looking directly at the worst offenders got them quieted down."

Leader: "Are you working here, Jack?"

Jack: "I don't know."

Tom: "No, he doesn't know anything."

Joe: "I won't bring up the subject now, Harry, only what did your mother say to my mother?"

Tom: "What did she say, Harry?"

Harry: "Don't tell, then I won't tell on you . . ."

Joe: "She said that Harry never combs his hair and she has to comb it for him."

The whole group seems to be momentarily down on Harry as work continues on the new clay mould. Sarah defends Harry once or twice. Tom goes over to the sink to wash his hands and scatters a few drops of water over the group. This seems to serve as some sort of precipitating factor. Work goes on but the hostility swings to a new and more definite focus.

A small precipitating factor reveals the strong tension existing in the situation

Joe: "Hey, you, don't throw water on my hair."

Tom: "Tattle tale" (referring to his "telling on" Harry).

Sarah: "Look out, Tom, quit throwing things."

Jack: "Smell that stuff."
Joe: "It's papier mâché."

Joe: "I don't think she missed the cake but she wanted to teach you not to do it again." — Growing verbal aggressiveness

Tom: "What could I do to replace it?"

Joe: "Well, if she didn't do anything, you'd be doing it all the time."

Tom: "Don't start crabbing. I wouldn't talk too much yourself."

Jack: "Let me do that" (putting on papier mâché).

Leader: "One more layer of paper and one of cloth."

Tom: "What are you guys making, mud pies?" (working on clay mould) — Tom attempts to gain a more secure in-group relationship,

Jack: "You couldn't make it, Tom."

Tom goes over to help in a co-operative way on the moulding at this stage and Joe and Jack refuse to let him work with them.

Harry to Tom: "You can't do what I'm doing."

Tom: "You just like to talk."

Joe: "Quiet, please!" (in mimic style)

Tom: "That's the only word the little guy knows, 'Quiet.'" — but is rejected and made the focus of verbal attack

Joe: "Let's hear you say 'quiet' again, Tom. I love to hear you say it. Now say 'please.'"

Tom: "I'd like to throw a handful of clay at you."

Joe: "Try it, I've got some soap here too."

Work drops almost to nothing as talk swings to the patriotic skit the classroom is rehearsing to put on for Washington's Birthday. — Work lessens as the overlapping social situation becomes more potent

Joe: "The practice was terrible because Tom was in it. He had to hold his pants up because he got them on backwards."

Everybody: "On backwards!" — Joe leads a unanimous attack upon Tom

Jack: "So Tom had his pants on backwards."

Tom has ceased to fight back and looks daggers at Joe so the leader decides it is time to take a little more vigorous command. — As a lone out-group member Tom ceases efforts to fight back (cf. Fig. 27, p. 170)

Leader: "All right, Jack, finish that up and put it in the corner."

Sarah: "Well, I'm going. I put the papers down and I'm not going to pick them up." — With the "solid front" broken by the end of the meeting, Tom singles out the chief aggressor

Tom grabs Joe by the arm and they tumble on the floor together. Jack and Harry both pull them apart as the leader starts toward them. Sarah leaves, and then Tom.

Jack to Harry: "Gosh, we put them down."

Jack: "Tom always says he is so brave."

Joe: "By golly, he won't get any masks done this year if he has to work by himself."

Harry: "He's like a centipede."

Joe: "Why is a centipede like Tom?"

Harry: "Because he is too stuck up." (Harry, Joe, and Jack leave.)

Jack, Harry, and Joe seem united by the bond of "anti-Tom-ism"

This rather amazing external polarization of the hostility that had seemed to exist, especially between Harry and Joe, a few minutes before left the leader a bit breathless.

The Scapegoat Focus Continues

Autocratic Group, Sixth Meeting

Everybody is present on time and they talk out-of-the-field about radio programs. Leader directs them to get ready to paint the mask.

Tom: "Where's the paint?"

Harry: "Shut up. The paint's all taken care of. You think you're smart."

Tom: "I'm a lot smarter than you are. Boy-oh-boy, can I ever brag!"

Harry: "I'd say you can."

Jack: "That's a pretty good mask, I think."

Tom to Harry: "Carry the bottles (paint) over there."

Harry: "Whoever unfastened this didn't put the lid back on very good."

Tom: "I didn't do it last."

Jack: "Well, I didn't either."

Harry blames Tom for the paint top laziness but all take an interest in the painting for a few minutes. Leader starts Jack and Sarah to work on the second clay mould, but Jack turns to watch the painting.

General hostility toward Tom still exists (cf. Fig. 27)

Sarah: "Jack, you're supposed to work with me. You've got to get all the cracks filled in."

Jack: "Old men have cracks in their faces, you dummy."

Sarah: "I'll get some clay out of here, it's soft."

Jack: "This is too darn soft."

Sarah (to other group): "Say, that red paint looks black to me from here."

Joe: "Yah, it does look black." (Tom is mixing it.)

Jack (looking): "Oh God, Tom, don't you know anything?"

Harry: "You spoiled it."
Sarah: "Joe gets to mix all the paint after this."
Tom: "Give me some of that paint."
Joe: "Now listen, here, is your brush washed good?"
Tom: "Sure it is. Give it here." — Tom is clearly on the defensive
Joe: "Better wash it some more."
Harry: "There, how's that for a mustache?"

Joe turns discussion to a movie magazine he has read and work continues quite well except that Jack keeps looking over at the paint group rather than helping Sarah with the clay mixing and moulding. Harry gets into another argument with Tom as the leader starts directing the cleanup. Sarah scolds Jack quite a bit.

Joe: "Come on, Tom, put your yellow paint away."
Jack: "Sure, you can help a little bit."

Tom makes a face at Joe and then walks out of the room before the bell. — Tom leaves the group, and doesn't return

Joe: "I don't know where the brushes go."
Harry: "Oh, hurry up, we'll be late washing up."
Joe: "I'll spank the teacher if he counts me late."
Harry: "Gosh, gee, but I've used a lot of towels today."

A Way Out

When the day for the next meeting arrived Tom did not come but Ray showed up.

Ray: "Tom said I could come in his place. He's not coming any more and he wanted me to have a chance."
Leader: "Why isn't Tom coming?"
Joe: "I guess he got tired of it or something."

During the week the leader made a point of seeing Tom for a moment on the playground.

Leader: "Ray tells me you're not coming to the club any more, Tom?"
Tom: "No, I guess not."
Leader: "Didn't you think it was much fun?" — Tom "legalizes" his leaving the club
Tom: "Oh sure, it was fun, but I can't stay for lunch at noon now, I'm eating at home for a while."

A check up at school showed that Tom was continuing to stay for lunch at school.

A Momentary Frustration

Democratic Group, Sixth Meeting

Although no real outbreaks of hostility occurred such as that we witnessed above in the autocratic group, it

will be seen in Figure 28 (page 168) that something must have occurred to change the tenor of the group spirit on this sixth meeting.

All are present except Dick who missed one meeting earlier. He is absent from school. All co-operate in getting the paper on the floor while the leader brings out the plaster of Paris mould with the papier mâché in it. The children excitedly ask to take it out.

High expectation as group goal is neared: completely co-operative spirit

Mack: "Better put a little more paper on the floor."

Jim: "I'll make it come out of that plaster of Paris all right."

All gather around as the leader, Jim, and Mack work at the edges of the papier mâché to detach it from the plaster of Paris.

Mack: "Going, going — look out, here it comes. Oh, shucks!" (as the mâché which had been too thin in the nose breaks.)

Expectations are dashed

Sue: "Which is the end of *that*!"

Mack sharply: "Look out, Jim, you're tipping it."

Obviously all the children are very disappointed with this outcome to their high hopes.

Jim: "Do you suppose we could use the same plaster of Paris to make another one this afternoon?"

Tension evident in change of voices and relationships:

Sue: "I know what, we'll let him (Jim) fix it. He can fix it up all by himself without anybody's help."

Mack and Sue, at least, seem to blame Jim for the accident. He had been most active in helping to get it out.

Jim appears to be potential scapegoat, but maintains a surprising work-mindedness

Jim: "Look, Mr. Lippitt, can I put some more on that as soon as I clean this out?" (the broken papier mâché)

Mack: "Too many cooks help the broth, or something. Makes it mush to eat, I mean."

Jim (working at pieces of papier mâché which have stuck): "Yah, I hear you, Mack. Look, there it comes."

Helen: "Oh, he's going to scissor it out. He's taking most of the time getting it out."

Jim: "I guess Mr. Lippitt can do it best."

Mack: "Oh, what's the inside there?" Inspects damaged mask. "Let's make another one."

New goal proposed

Sue: "Sure, we can still make another one. Or let's take some of that (the soft clay) and fill it in."

Then a minor discussion of the group goal appears for the first time.

Jim: "I think I'm going to work on something else over here."

Mack: "I think I'll make something too."

Helen: "I didn't know we could fix it up. Let's try."

New individual goals of Mack and Jim conflict with the group locomotion

Mack (taking most of the clay): "I'm going to work on this over here in the sunlight. I'm going to make a turtle."

Jim: "Can we use the same stuff?" (Referring to clay Mack has.)

Mack: "Get away from there, that's all you get" (giving him a small handful). "I'm going to make a little model turtle first. I'm the famous turtle maker, I am."

Jim: "That's what you think."

In the meantime Helen and Sue have been modelling a thin layer of clay on the outside of the papier mâché mask to fill out the nose, etc.

Helen: "There, does that look better?"

Sue: "Sure, it was a good idea of mine."

Jim: "Mr. Lippitt, how about putting this tail on for me?"

Mack: "That's easy. See, you just push up on it like that."

Jim: "But every turtle I've seen has a tail that sticks out like that."

Mack: "Just a second, I'll make you a tail and show you how to do it."

Helen: "Let's put this (the pirate) on the screen in the room."

Mack: "Let's see, Helen, how is it?"

Helen: "That's a mustache."

Mack: "What color hair is he going to have?"

Sue: "Say, red hair would change everything."

The storm seems to have blown over for the moment. Mack and Jim continue on their new tasks but make suggestions to Helen and Sue about the pirate mask. All join in the cleanup except Mack who keeps working with the clay until after the bell.

The next meeting of the group was a very active one. Dick, Helen, and Sue worked painting the pirate. Mack and Jim continued on their individual projects but with a great deal of interchange of suggestions about the pirate and about their turtles. Mack mixed plaster of Paris for the whole group and finally joined the larger subgroup, leaving Jim by himself. A new face was moulded and the children delegated Sue to go and ask

Soon a return to more complete we-mindedness is accomplished

the teacher if they couldn't stay a few extra minutes to finish pouring the plaster. There was much exchange of ascendance of a very work-minded, instruction-giving type. The only real point of friction in the group was completely passed.

A New Explosion

Autocratic Group, Ninth Meeting

Social relations overlap the work situation and appear to be more potent

There is considerable milling around as the leader tries to get the members down to work on painting the mask and putting papier mâché on the new one. They play around and talk out of the field a good bit, Harry especially trying to attract attention. All seem to be in a rather belligerent mood with Joe having the edge on sarcasm.

Jack: "Joe sure can't paint. He doesn't know anything."

Sarah: "The red and black better be mixed."

Jack: "Give me the paints."

Harry: "I can't find all the paints. Joe is a worm."

Sarah: "Look at Nast!" (Joe, who is mixing paint.)

Harry: "Let's hope he gets it again."

Sarah: "What?"

Harry: "A headache."

Verbal aggression seems to polarize against Joe

Hostility seems to be definitely focusing upon Joe, led by Harry. Even Sarah has become very verbose as she works with Ray and Joe. She seems to take out on rather submissive Ray the sarcasm Joe directs toward her. Gradually Joe loses his aggressive lead.

Jack: "Do you know why we got a lot done last time?"

Harry: "Why?"

Jack: "Because Joe wasn't here."

Harry: "Somebody get a pan of water for us."

Sarah: "Get it yourself."

Harry: "Get a pan of water, Jack."

Jack: "Why don't you get it yourself?"

Sarah: "You can see where Joe and those guys painted with the other color on here."

Jack to Harry: "Gee, that's a terrible color. That's the color Joe had."

Jack: "I think that Joe ought to paint the hair. That's a lot better than he can paint."

The leader is constantly supervising and giving suggestions, but the main current of conversation sweeps by with but little reference to him.

Harry to Leader: "I need a little black in there, don't I?"

Joe tries to escape the unsatisfying field of personal relationships by assuming work-attitude, but he fails

Joe (after some silence): "Hey, you guys, this looks like dough." (Seems to want to be work-minded again.)

Jack: "Yeh, it looks like you."

Sarah: "Joe has got that thing so full he can't even stir it."

Harry: "He ought to know, he's been dippy long enough."

Jack: "Nast is a flea. He's so little you can't tell where he is."

The work continues but the attack has centered upon Joe, who, interestingly enough, had been chosen originally as second to Tom in leadership.

Harry: "Surely the bell hasn't rung yet."

Work-minded relation between other four members seems to develop from mutual attack on Joe

Sarah: "Well, I hope it forgets to ring in here. You guys haven't got nothing done yet. You just stand there and talk."

Harry to Jack: "I painted over this in one of my weak moments."

Jack: "We'll never get this done if we have to paint it again."

Sarah: "Yah, it takes about half the period to mix the paints right."

Jack to Joe: "Put your nose down on there and get it dirty."

Joe: "Shut up, why don't you. Rest your jaws for awhile. You sound like one of those guys over the radio."

Harry: "You ought to know, Joe."

Joe attempts to regain social status

Joe: "Sure, I've got three radios, I ought to know." (A search for fading prestige in the face of odds.)

Everyone: "You have not."

Joe: "Oh, yes, I have."

Jack: "You mean maybe your dad's got them."

Joe: "No, they're all mine."

Sarah: "Why don't you do a little work?"

Joe identifies self as out group member; tries to gain equal work status, but the attack continues till the last

Joe (very defensive and defeated tone): "I don't care. I've done just as much work as you kids." (Recognition of being alone against the group.) "I tore up some of the sheets and mixed the paste."

Sarah: "If you tore up two sheets, I tore up ten. Hey, don't wet those, you dummy (to Joe), there's enough paste in there now."

Jack to Harry: "It looks better than when we let little Joe paint it."

Joe: "We ought to start cleaning up."

Jack to Harry: "Look what that guy's (Joe) doing."

Sarah to Joe: "Here, take care of your paste."

Joe to Jack and Harry: "Good painters always pick up the brushes and things."

Leader succeeds in getting them to pick up most of their things.

Another Way Out

Joe did not come to the next meeting and Harry said he hadn't seen him much for a couple of days because he was playing with some of the "littler kids." Two or three days later however I saw him back playing with Harry, Jack, and the others, and made a point of meeting him in the hall as he was going in.

Temporary effect of loss of club status upon playground relationships

Leader: "I'm sorry you couldn't get to the last club meeting, Joe."

Joe: "Yes, I liked it all right; we had a good time, but my eyes are bad (he was wearing dark glasses), and the doctor said I really ought to stay outdoors during the noon hour."

Breaking away "officially"

The fact about his eyes being cared for proved to be correct, but the part about staying outdoors a fabrication.

A Change in Personnel

Each group had had nine meetings of the ten or eleven which had been planned. It was thought desirable to conclude the activities before interest began to wane noticeably. Mask-making still seemed to be attractive, though less energetic in the autocratic group. One more step was taken which it was hoped might in a preliminary manner point out further steps for a more complete study. One member of the democratic group was changed to the autocratic group and a similar shift was made in the opposite direction. Sarah and Sue were chosen as participants in such a change. The leader met them outside of the club situation to explain.

Leader to Sue: "Would you mind meeting with the other group next time, Sue?"

Sue: "Maybe. I guess not. Why?"

Leader: "They need a new member. That'll give you a chance to meet right away again tomorrow."

Sue: "O. K." (Still a bit uncertain in tone.)

Preparing the shifts in group membership

Leader to Sarah: "I'm going to ask you to meet with the other group for a while, Sarah."

Sarah: "O. K. Will I come to our meetings, too?"
Leader: "No, you'll belong to the other group now. They meet Wednesday."

Introduction to Democracy

Democratic Group, Tenth Meeting

(First with Sarah in group.)

When the leader arrives Sarah is there alone, about eight minutes ahead of time. Jim and Dick come in together, marbles in hand, then Mack, and finally Helen — still a minute or two ahead of time. — The new member comes early

Jim: "If we can get things done in a hurry we'd like to go out and play marbles for ten minutes at the end."

Dick joins Mack in taking the materials out and Jim goes to work on his individual project, the little turtle. Mack's original project of the large turtle has become the group activity. It is ready to take out of the mould and paint. Sarah receives a friendly smile from Helen who joins Dick and Mack but takes a less active part in prying out the mask. Sarah watches quietly with apparent interest. She is a member of the large group spatially while Jim is separate, but in conversation and spontaneity Jim is the member and Sarah is in the peripheral position. Mack points to the pirate mask and says to Sarah, "Our mask is better than yours." She makes no reply. As the mask becomes looser the activity and interest rises and Sarah gets down on her knees to watch. Jim offers suggestions now and then as he works at painting his little turtle. Helen is quite friendly to Sarah, but a bit condescending. Sarah helps pick away some of the plaster at about the end of ten minutes in the new group. — Individual goal still occupies Jim — Differences in work and conversational peripherality

Jim: "What do you want to do with my little turtle?" (Quite a surprising display of group spirit on the part of the member the leader had regarded as most deviant from participation in group locomotions.) — Jim integrates his individual project with the larger group goal

Helen: "Why don't you give it to Mr. Lippitt?"
Jim: "Oh, he wouldn't want this, would you?"
Helen (laughing): "I guess you'll have to take it then, we can't have junk around."

The mask comes out and Jim asks Dick if he is ready to go out and play marbles.

Dick: "I guess I won't go yet."
Jim: "But three are enough to paint the mask."
Dick: "Well, I'll just watch then."

Mack plays with the turtle mould — filling it with marbles — and zooms it around in the air, doing the "breast stroke." Then he seems to take over the most active part from Dick and begins to make plans for the painting. Helen offers several suggestions. Mack and Helen start painting and Sarah takes a brush also.

Spontaneous group structuring of a new region

Mack to Sarah: "Bring over some water."

Sarah (in an unfriendly tone): "Get it yourself." (This seemed to the leader to be the "style of living of autocratic group" cropping out rather than any discontent with the new group.)

Former "style of living" (?)

Sarah does not join in the flow of running conversation but takes some part in the painting. Jim pesters Mack by putting marbles down his back as he leans over painting. The bell rings and Dick, Jim, and the leader make the first moves to clean up. We may quote here from the comments of one of the observers: "Dick, Jim, and Helen, and the leader all clean up while Mack continues painting and Sarah looks on at the cleanup activities with a rather bewildered expression on her face. No one had directed her to cleanup and she seemed to be without motivation. They all laugh over a remark of Mack's. He finishes painting and joins in putting things away. Sarah still looks on somewhat puzzled. She finally joins Helen in putting scraps of plaster of Paris in a pan." (Her autocratic group experience had not prepared her for this spontaneous performance of a "duty.")

New and former membership character clearly conflict

Beginning to Participate

Democratic Group, Eleventh Meeting

Sarah is again the first member in. All seem to be in a jocular mood. Jean, a friend of Helen's, has come to take her place while she does something for the teacher. Sarah is in every respect more of a functioning member as things begin than she was last meeting.

Mack: "Can you guys keep a secret? Can you keep a secret, Mr. Lippitt? Maybe I hadn't better tell. Miss Doe told me not to tell."

Dick: "Sure, tell us, Mack."

Mack: "We're going to have a surprise party today."

The discussion turns quickly to what they want to make for the next mask (no mention has been made of limiting the club to eleven meetings). (See description later of voting.)

Jim: "I thought someone wanted to make an Indian. What did you want?" (To Sarah.)

Sarah now a fully accepted member

Sarah: "I don't know."

Dick: "I don't care what we make just so we get it made."

Jim: "I think we ruined this mask when we put that black mustache on it."

Jim goes over to begin moulding parts of his little clay turtle again.

Dick: "Oh, he's making one of those little things again."

Decision difficulties of the democratic process when leadership is lacking

Sarah to Leader: "Let's hurry up. We've spent almost ten minutes thinking of something to make." (Is this her background of no planning in the autocratic group?)

Jean: "I'd like to make Diana. She's the wife of Silver."

Jim: "Let's make a monkey."

Sarah: "It's a monkey we're going to make."

Mack: "Let's make a mask of Mr. Lippitt."

Sarah: "Well, let's make something."

All finally decide to make Diana except Mack who is adding some more painting touches to the group turtle. Dick, Sarah, and Jean are especially active in beginning the new project. Jim goes and brings in a picture of Diana from their book. The moulding goes along rapidly.

Sarah to Jean: "Say, this is getting to look just like her. It really is."

Jean: "It's going to be good." (Very enthusiastic worker.)

Sarah: "Do we want her mouth open or shut?"

Dick: "Don't make her mouth turn up. Make it turn down."

Jim doesn't show a great deal of interest in the new project as the moulding goes on, sitting and watching but doing very little work. Sarah and Jean get along very co-operatively. Helen comes in toward the end; the leader asks them to all rest a minute to answer the two questions on the cards he hands out. Everyone marks his choice very seriously and independently. Jean asks if she may come until Diana is finished. The leader announces that because of the vote there will be another meeting or more, but only for those that want to come, because the regular club is over. Mack and Helen help the leader clean up before they leave. (See vote results later.)

Club activity still attractive

The Shift to Autocracy

Autocratic Group, Tenth Meeting

Sue is there first and sits waiting for the others to come. They arrive a bit late, all except Joe who has quit the club. The leader directs them to get out the materials (each meeting seemed to make more minute directions necessary). Sue is the first to respond. She looks at the mask to be taken out.

New member (Sue) is first, and most responsive to commands

Sue: "Aren't *they* (her new group) making anything but that?"

Jack: "Did Sarah really change? Is she going to be with them all the time?"

Leader: "Yes, Sue is in our group."

Sue to Leader: "Oh, do *they* use that green stuff too?" (Kind of clay.)

Sue feels no "belongingness" to the new group

Jack and Harry are in a silly mood. It is hard to get them down to business. Ray and Sue work the hardest although Jack joins them when the leader speaks to him directly. Harry seems to be making a great many plays for attention. The leader has to keep calling him back into the field.

Sue (after about twenty minutes): "You're different in this group, aren't you?" (Talking to Ray.)

Jack: "How come?"

Confirming the differences in psychological situation of the two group atmospheres

Sue: "Oh, the whole thing. We're a little more independent than you are."

Harry: "What do you mean?"

Sue: "We had things more our way. Are his eyebrows supposed to come down to his nose?"

Harry to Leader: "Do we get a vacation?"

Jack: "Don't mind him. He doesn't know anything."

Sue to Jack: "Shall I make those eyelids down to there?"

Jack to Ray: "Hey, you spilled the water. I got mine mixed up right and got something done."

Harry to Ray: "It doesn't take me as long as it did you and Joe to do this mixing."

Sue to Ray: "You've got too much water there." (He corrects it.)

Sue goes over to get the democratic group's pirate mask out of the locker. The others look at it and make some comments.

Sue: "It's got its mouth shut just like it should be." (Looking at leader.) "Isn't *our* mask better than

Sue maintains

their's?'' (Clearly has not identified self with new group yet.)

identification with former group

Leader: ''Oh, I don't know. It's a different kind.''

Jack to Sue: ''You would say that. You helped paint it.''

Leader directs the group to begin cleaning up, and again Sue is the first one to respond, but does a very little bit and then leaves. Harry is rather proud of the painting he finally settled down to do in the last ten minutes and demands attention from the leader who praises him. He is the last to leave.

Deviating from the Autocratic ''Style of Living''

Autocratic Group, Eleventh Meeting

All gather around the mould. Leader gives instructions but the reaction is slow. He has to direct everyone separately. Jack puts a piece of paper on the floor and he and Ray sit down and begin to break up the clay. Sue begins to mix the paste and Harry goes through the movements of tearing up paper for the papier mâché, but is acting very silly and demanding attention. Ray wanders off for a moment to stare at the fish in the aquarium bowl. When the paste is finished, Sue goes over and brings out the little mould Jim had used in the democratic group announcing that she is going to make her own turtle. She finally shows her identification with the group however with a remark to the leader, ''What are *we* going to do next?'' The leader takes no steps to deter her from going ahead on her own project which is either an ignoring of, or a rebellion against, the authority of the leader.

Individual goal more potent than any feeling of ''belongingness'' to the new group

A Final Release

Autocratic Group, Eleventh Meeting (Continued)

With about fifteen minutes of the period gone the leader brings out the cards to vote on. (Two questions: Would you like to end with this meeting today? Or go on one more week? Or even longer?: What would you like to have done with the masks?) We quote from a description by one of the observers: ''All take the voting very seriously and seem to make exaggerated efforts to conceal their voting. Jack and Ray go out of the room into the hall. Sue stands in the doorway, hand shielding her card. Harry makes his out quickly and leaves it across the room on the table. Sue returns the leader's pencil and runs out of the room. The leader calls her and she says she will come back in a minute. She returns and hands the card to him with evident

embarrassment. Jack puts his vote under a book on the table after filling it out. Ray hands his in slowly. I have a hunch he colluded with Jack. Peculiar actions begin after the leader announces there will be no more meetings. The leader asks Harry and Jack to put more paper on the floor to work on. They put it down and then run and jump on it time and again in a wild manner. The masks are divided out as in the voting and Jack immediately begins to throw his around violently, pretending to jump on it. He throws it down again and again, laughing. Ray wants to know if it won't break, then starts to throw his down too. Later Jack and Harry chase each other around the room wildly with streamers of towelling. The leader finally gives them the choice of staying and working for the rest of the period or leaving. Ray and Sue, who have been looking on, leave immediately. Harry says he'll stay and finish his mask. Jack says, "You can finish it, we'll go." He leaves. Harry works for a few minutes and then makes arrangements to take some paste home to finish it there.

Release of tension and aggression against objects (masks) identified with the club work and situation

Some Differences in Motivation and "Group-Mindedness"

The differences in group voting on the secret ballot tell an interesting story:

1. Would you like this group to end with this meeting or go on for one more week, or keep on for more than a week?

A Group	D Group
Sue: "Today."	Dick: "Just this week."
Jack: "End it today."	Sarah: "At least this week."
Ray: "Today."	Jim: "Today."
Harry: "Go on one more week."	Mack: "Today."
	Helen: "Maybe more than a week."
	Jean: "Till we get Diana done."

2. What would you like to have done with the masks?

A Group	D Group
Sue: "Give us our masks."	Dick: "Give the pirate to Mr. Lippitt and the rest to those that had the ideas."
Jack: "Let me have mine."	Sarah: "Each take their own." (A Group transfer.)
Ray: "Give us our masks."	Jim: "Give the pirate to Mr. Lippitt and divide the others."
Harry: "Match pennies."	Mack: "Give them to the ones that had the ideas."
	Helen: "Give Diana to Miss Doe, keep the pirate for our puppet show and then give it to Mr Lippitt."
	Jean: "Give Diana to Miss Doe."

It is interesting to note that each of the autocratic group had a definite idea as to which was his mask and they seemed to be fairly generally accepted by the others. Harry regarded the half-finished mask as his and naturally wanted the group to meet another time or two to finish it up, or else his vote of "match pennies" might succeed in winning one or the other of the masks.

Dick, Helen, Jean, and Sarah in the democratic group returned the next week to finish, and Diana and the three girls met once more before deciding to quit. Regular observations were not taken on these last two meetings.

Impressions

It is hoped that this sketchy summary of the most interesting spots in the lives of the two clubs will have given the reader some of the impressions which grew in the minds of the observers and leader as they watched the groups develop. A full summary must wait for more quantitative affirmations, but it may help the reader in his independent interpretation of the graphs and tables to check back from time to time to these abbreviated accounts of the "atmospheric conditions." In this way the high peaks on such a graph as that of "recipients of dominating behavior" (Figure 27, p. 165) will become more clearly identified as children who have become the focus of group frictions.

It will have become obvious that these authoritarian and democratic atmospheres vary in numerous respects, more or less superficial, from a variety of such atmospheres which could be pointed out. The painfully silent, autocratic schoolroom would give us quite a different set of observations, but the repressed feelings may be similar to the ones we have purposely allowed to be "aired." We are after a description of the situation as it looks to, and thus affects, the participant in the authoritarian or democratic group. This necessitates permitting certain "atmosphere tests" (e. g., free speech, some spontaneous group structuring, purposely withdrawing authority) which will give insights not available in the more rigid examples of authoritarianism. The progressive educator would observe probably that far more social interactions take place between the children in the free school than in the traditional one. Surely this seems true as one observes the co-operative interplay of opinions in the more modern school. Our results are quite different in this respect but the reasons for such a contradictory finding will be apparent if the different components of behavior which are

itemized in our results are kept in mind. Many authoritative club leaders have insisted that their groups have more unity and group spirit than those of the "easy fellows." But how much of this "group spirit" is a leader-imposed goal from which members dare not deviate? And how much of this "unity" is leader-induced stability? To what extent are "laissez-faire" leaders and "democratic" leaders confused in observing the methods of the "easy fellows"? Our own interpretations must remain cautiously oriented to the outcomes of the *particular* autocracy and democracy in this study. It is too easy to state as generalizations findings which may turn out to have very limited scope. Just as the impressions derived from these descriptions of the group lives must be checked by the summary of results which follows, so must that summary of results be checked against many others.

RESULTS AND INTERPRETATIONS

Group Atmosphere Creating Factors

The results of this section are a check on the efforts of the leader to carry out the two methods of club leadership which were to differentiate the social atmospheres of the club life. In Table 1 and the other tabulations may be found the quantitative indices of "autocratic method" and "democratic method" as they existed in this experiment. It was entirely possible that the leader might behave quite differently in the club situations from his preformulated intentions. This check on intensity and nature of leader activity was thus essential. Several calculations of leader behavior are given in Table 1 which demand a note of explanation to facilitate the reader's interpretation. Because the number of minutes of group life was not exactly equal for the two clubs a correction of the second column, "Number of incidents of behavior" has been made, using the interaction-possibility time weighting described in the discussion of group mathematics (74). The true comparison of the behavior of the leader in the two situations is found then in the third column, "Social activity per unit of time and interaction possibility." The fourth and fifth are comparisons of leader and child behavior. We may compare the activity of the leader toward the child members with the total activity of the average child member (including his action toward the leader), or with the activity of the average child member toward his fellow child members. The first comparison is given in the fourth column and the second in

TABLE I

SOCIAL ACTIONS OF THE LEADER TOWARD THE GROUP MEMBERS

Categories of Behavior	*Number of Incidents of Behavior*		*Social Activity Per Unit of Interaction Possibility*		*Per Cent More (+) or Less (—) Than Average Member's Activity*		*Per Cent More (+) or Less (—) Than Average Child to Child Action*		*Per Cent of Leader's Total Social Actions*	
	A	D	A	D	A	D	A	D	A	D
Total social actions	718	361	8.10	4.50	+ 65	+ 8	+ 79	+ 43		
Total initiated social approaches	449	180	5.20	2.20	+119	+ 35	+124	+ 47	63	50
Total social responses	269	181	3.20	2.30	+ 18	+ 41	+ 36	+ 40	37	50
Total ascendant actions	542	211	6.30	2.60	+130	+ 49	+114	+ 43	75	58
Initiated ascendant acts	445	170	5.20	2.10	+134	+ 36	+134	+ 36	62	47
Total submissive actions	13	27	0.15	0.33	—460	—124	—180	— 76	1.8	7.5
Total objective actions	55	75	0.61	0.93	+276	+520	+392	+561	7.8	21.0
Ignoring behavior	108	48	1.20	0.59	— 8	+ 4	+ 2	— 5	15	13

*Authoritative

**Democratic

the fifth in terms of per cent more or less of leader activity than of average member activity. We are using a hypothetical "average club member" as a yardstick with which to measure the actions of the leader in each atmosphere. In all of the developmental graphs of group and individual activity (Figure 3, for example) it will be noted that the third meeting has been omitted. The lack of parallel observations for all the strands of data on one of these meeting days makes this omission necessary.

The Total Social Actions of the Leader

Table 1 shows that the leader was decidedly more active in the authoritarian group, making about two social actions to every one made in the democratic group. While the democratic leader was only 8 per cent more active than the average member, the authoritarian leader made 65 per cent more social actions than would have been expected on an "average member" basis. The authoritarian leader made 79 per cent more social actions toward a child member than the average member made toward his fellow member as compared to 43 per cent by the democratic leader.

These total actions consisted of two general types, initiated social approaches (e. g., giving instructions), and responses to the social approaches of others (e. g., answering questions). We would probably expect the balance between these two types of behavior to differ somewhat with the member's status in the group. The results indicate that the autocratic leader made about five initiated social approaches to every two by the democratic leader. The autocratic leader was 119 per cent more active in approaching other members than if he had been an equal member. The democratic leader was only 35 per cent more active in initiating social actions than was the average child member. When we look at the social response category a somewhat different picture is found while the authoritarian leader makes three responses to child members for every two by the democratic leader, we find that for the autocratic leader this is only 18 per cent more response activity than the average member, as compared to 41 per cent by the democratic leader. Clearly the authoritarian leader tends to initiate a preponderance of social approaches toward his club members, while the democratic leader responds even slightly more often than he initiates approaches.

The Ascendant Actions of the Leader.— The analysis of actions

to direct the behavior of others is a first step toward breaking down the most inclusive category of "social actions." This does not yet indicate the particular kind of directing that was done. Because of the difficulty already mentioned of getting a complete stenographic record of the leaders' conversations with one stenographic recorder, it has been impossible to refine this category as qualitatively in the analysis of leader activities, as has been done in studying the actions of the child members.

The data indicate that the authoritarian leader made about five ascendant actions toward the group members for every two made by the democratic leader. About 75 per cent of the former's social activity can be called ascendant while 58 per cent of the actions of the democratic leader fall in this category. In both atmospheres the adult leader was more ascendant than would be expected of an average child member, but, while the democratic leader was only 49 per cent more directing in his behavior, the authoritarian was more ascendant than two average members added together (130 per cent). The authoritarian leader dominated the situation even more (134 per cent against 36 per cent) when initiated ascendant actions were separated from total directing activities. The authoritarian leader initiated 134 per cent more directing actions toward the child member than the average child did toward his fellow members, as compared to 36 per cent more by the democratic leader.

In Figure 3 the significant differences in ascendance of the leader in the two situations may be seen in relation to the development of the two group atmospheres from day to day. It is interesting to note that the abnormally high peaks of leader direction on the sixth and tenth meetings of the authoritarian club came on the days following rather abnormal outbursts of tension by the group members on the fifth and ninth meetings. The highest peak of ascendance for the democratic leader came on the second day when the group was really beginning the activity of mask-making and had not attained an independence in structuring their activities. It will be recalled also that on the tenth meeting of each group a new member was introduced. It is clearly seen from Figure 3 that leader direction of behavior was almost the same for the two groups at the beginning of the series of meetings, probably for two main reasons: The authoritarian leader was purposely less directing in behavior the first day than at any other time, and the democratic leader had to structure the work field to a greater extent during the first meetings before "democracy" was thoroughly es-

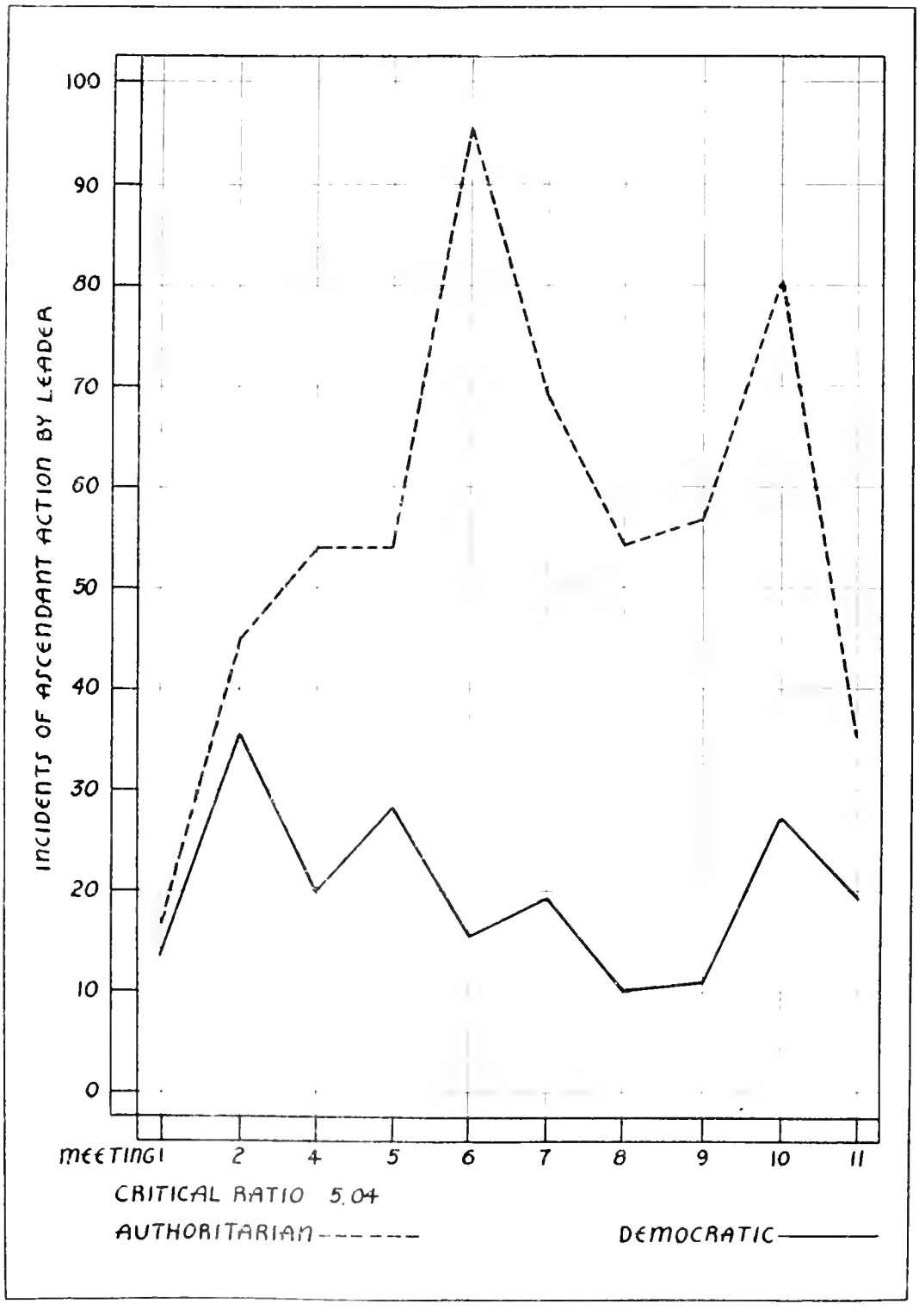


Figure 3. Leader Direction of Group Behavior

tablished. A second study [6] has pointed out the important distinctions here between the establishment of "laissez-faire" and "democratic" social climates.

To get some indication of the extent to which the greater amount of direction by the leader in the authoritarian group was actually cutting across the spontaneous goals of the group members, a brief analysis was made of the records for the second autocratic and democratic meetings. In the authoritarian group we find seven incidents in which the leader barred a child from his expressed goal and induced action toward the leader's goal. No such incidents of goal frustration appear in the records for this meeting of the democratic group. In both groups, of course, the leader induced goals by suggestions and explanation of technique, but the actual goal-setting was always by the children in one case (democratic group) and was more often by the leader in the other case, when his goal or path *for* them did not *coincide with* their own.

Submissive Behavior of the Leader.— As could be expected neither leader was particularly submissive in his relations with the other group members, but there was quite a difference in the proportion of such activity by the leader in the two groups (Table 1). Only 1.8 per cent of the authoritarian leader's actions fall in the submission category as against 7.5 per cent by the democratic adult. The latter made a submissive action about twice as often (.15 as against .33) as the authoritarian leader and was about three times more submissive than the authoritarian leader when compared to the average member's activity (−124 per cent compared to −460 per cent). These data have not been broken down into an initiated submission category because of the small number of incidents in the more inclusive category.

Objective Social Actions. — As defined in this study these actions might be designated as the "non-social" elements of social interaction. They may be characterized as "lacking in personal involvement," "matter-of-fact," or "fact-minded" (centered on information). This type of social action has been differentiated in the conversation analysis later from work-minded or "objective" ascendance as contrasted to "person-minded" ascendance.

About a fifth (21 per cent) of the democratic leader's activity was of this objective nature as against 7.8 per cent by the authoritarian leader. The former made about three matter-of-fact actions

[6] Lippitt, Ronald, and White, Ralph K.: Unpublished study.

to every two by the authoritarian leader. Both leaders, however, were highly objective as compared to the other members of the group, principally due to the large amount of technical information which needed to be shared with the other members. The authoritarian leader was 276 per cent more matter-of-fact than the average member, and the democratic leader was 520 per cent more objective than the "normal" base.

Ignoring of Social Approaches.— Refusal to respond to a social approach was recorded by the interactions observer only when, by some cue, it appeared that the recipient of the social action definitely recognized the approach but chose to ignore it.

Although the autocratic leader ignored a social approach twice as often as the democratic leader (1.2 as against .59) the proportion of this behavior in the total social actions of each leader is not greatly different (15 per cent for authoritarian, 13 per cent for democratic). The authoritarian leader ignored an approach about 8 per cent less often than the average member, and the democratic leader failed to respond 4 per cent more often than the average child member. There seems to be an indication that the leader was close to the "style of living" of each group in the use of this social technique.

Domination of Group Structure.— One of the stated aims of the authoritarian technique was to control the particular working relationships of the members, as well as to set the goals toward which they were working. One test of this, as has been discussed, was the recording, by the group structure analyst, of whether a particular group structure was initiated by the leader's telling certain individuals to work with others; or whether it was spontaneous in its personal groupings. The tabulation below indicates the role of the leader in each club in this regard:

Group	*Spontaneous Structures*		*Initiated Structures*	
	Number	*Average Minutes per Structure*	*Number*	*Average Minutes per Structure*
Authoritarian	63	2.2	27	4.7
Democratic	88	3.0	0	—

The tabulation indicates that the authoritarian leader dominated 30 per cent of the ninety group structures that occurred during the life of the club, while the democratic leader left the problem of who

was to work with whom entirely up to the group. The number of leader-induced subgroup goals in the authoritarian group was even greater, for the leader never initiated a new structure without setting the particular goals of the various subgroups in it.

The only other factor of the group structure analysis pertinent here is the effect of the leader's domination of activity structure upon its duration. We see from a comparison of the spontaneous groupings that the democratic group was somewhat more stable in its subgroupings (3 minutes compared to 2.2 minutes). On the other hand the leader evidently imposed a rigidity of subgroup structure upon the authoritarian club in the process of initiating its structure, to the extent that each nonspontaneous group lasted an average of 4.7 minutes.

The Position of the Leader in the Group.— One of the planned differences in leadership technique was that the democratic leader should attempt to make himself a member of the club in-group, leading from within the group structure, rather than dominating from a relatively out-group position. Table 2 indicates to what degree the democratic leader was successful in his aim. It must be recalled at this point that "in-group" and "out-group" as interpreted by our group structure analyst mean "activity in-group" and "activity out-group." We find that 25 per cent of the time of the democratic leader was spent as an in-group member as compared to 14 per cent of the time of the autocratic leader. While 27 per cent of the social actions of the democratic leader toward the other members were in-group relationships, only 9 per cent of the actions of the autocratic leader were from this position. An even larger per cent (33 per cent) of the initiated social actions of the democratic leader were from an in-group position. In 14 per cent of his ascendant actions the autocratic leader was an in-group member as against 32 per cent for the democratic. Almost half (41 per cent) of the democratic leader's submissive behavior was as an in-group member, while only 1 per cent of the authoritarian leader's submissive actions was made in an in-group relationship. Evidently the smaller social distance made the authoritarian leader, in this case, even less likely to allow his behavior to be directed by the members. The factor of "social distance" may also be involved in the finding that 12 per cent of the democratic leader's matter-of-fact, nonego-involved actions were in-group relationships, as compared to 5 per cent of the autocratic leader's.

TABLE 2

THE LEADER AS AN IN-GROUP AND OUT-GROUP MEMBER

Categories of Behavior	*Per Cent*					
	In-Group Action in each Category		*Out-Group Action in each Category*		*Club Time Spent as In-Group Member*	
	A*	D**	A	D	A	D
Total social actions	9	27	91	73	14	25
Total initiated actions	10	33	90	67		
Total ascendant behavior	14	32	86	68		
Total submissive behavior	1	41	99	59		
Total objective behavior	5	12	95	88		

*Authoritative

**Democratic

Summary of Leader Activity.— Our measures of the behavior of the leader in the two club situations seem to indicate that:

1. The authoritarian leader was about twice as active as the democratic leader in terms of total social interactions and 65 per cent more active than the average member of the group. The activity of the authoritarian leader was even more out of proportion to the democratic leader's and the average member's when only initiated actions, rather than total actions, were considered. He initiated more than twice as many social actions as did members on an equality basis.

2. The authoritarian leader made more than twice as many ascendant actions toward the other members as the democratic leader. Three-quarters of the former's actions in the group were ascendant in nature, as compared to about half of those by the democratic leader. The authoritarian leader was more than twice as directing in his behavior as the average member, while the democratic leader was slightly one-third more ascendant than would have been expected of an average child member.

3. The ascendance of the authoritarian leader tended to increase from a low point on the first day, while the ascendance of the democratic leader tended to decline from a high point on the second day.

4. The directing behavior of the authoritarian leader tended to frustrate own-goals of the members more than did that of the democratic leader.

5. Neither leader was as submissive in his behavior as a member on an equality basis. The democratic leader, however, was about three times as submissive as the authoritarian leader when compared to the average member

base. The authoritarian leader was submissive half as often as the democratic leader.

6. About one fifth of the democratic leader's social actions were matter of fact in nature, as compared to less than one-tenth for the authoritarian. Both leaders, however, were much more "fact-minded" than other members, the authoritarian leader making two and one half times more actions of this nature than "average," and the democratic leader more than five times as many.

7. The authoritarian leader tended to ignore the social approaches of other group members more often than the democratic leader, though each was close to the style of living of his own group in this respect.

8. The authoritarian leader dominated about one-third of the subgroup structures which occurred in the life of that club, and such leader-initiated subgroupings lasted more than twice as long as the spontaneous groupings. The democratic leader never dictated the subgroupings of the members. The democratic spontaneous subgroups were more stable in duration than the spontaneous groupings in the authoritarian atmosphere.

9. About one fourth of the time the democratic leader was regarded (by the group structure recorder) as a member of the activity in-group in his club relationship, as compared to one-seventh of the time for the authoritarian leader. More than one fourth of the democratic leader's social actions were as an in-group member, while the authoritarian leader was in an out-group position in more than nine-tenths of his social interactions. The democratic leader tended to be more submissive than ordinary as an in-group member; the authoritarian leader was less submissive when he was an in-group member.

Topological Interpretation of the Influence of the Leader in the Two Club Atmospheres.—The writer has no intention of going systematically into the problem of topological representation of group situations and relationships in this study. It has seemed very fruitful, however, to stop from time to time in the presentation of the quantitative results to analyze the topological and dynamic relationships which seemed to exist in the two club situations. The methods of topological and dynamic representation are as yet quite unformulated in dealing with social psychological problems. The author's interpretations here will no doubt appear rudimentary when the concepts in this area are more clearly developed.

A. Leader's Influence on Accessibility of Own Goals: An example from conversation follows:

Autocratic Group	Democratic Group
Tom: "Let's make this one."	Dick: "How big will we make them? Are they out of clay or what?"
Leader: "No, not that one."	Leader: "Would you like me to give you a little idea of how they generally make masks?" (All nod.)

We will represent the leader and his influence in the life space of the club in red to distinguish it from the "own" structure of the child. We noted that the tendency of the authoritarian leader was to cut off the members from their own goals which did not coincide with his (Figure 4, authoritarian, p. 113). In the democratic group, on the other hand, he aided the children in their locomotion toward their own goals by helping them to bridge the difficult barriers, with information, advice, etc. (Figure 4, democratic). Roughly it can be stated that the democratic leader tended to induce field structures which took into account the own goals of the members (helped structure paths, etc.), while the authoritarian leader induced valences which sometimes were, and often were not, accepted by the members.

B. Method of Leader Induction of Goals: An example from conversation follows:

Autocratic Group	Democratic Group
Sarah: "I think that one would be the easiest to make, huh?"	Dick: "Shall we work separately?"
Leader: "This is the one we'll do. I'll bring the clay next time and we'll get started."	Leader: "There are quite a few things to be done on a mask. Don't you think it would be a good idea if we tackled one at a time?" (Nods.)

We must make a distinction in representing social behavior between "own goals" and "induced goals." Naturally both club leaders induced some goals in the lives of the club members. But a rather clear difference existed between the method of inducing a change of goal in the two atmospheres. In the authoritarian situation (Figure 5, authoritarian, p. 113) the technique was to induce the leader's goals *for* the members by blocking access to their original goal and presenting them with the new one, which in most cases had some, though less, attraction for them. In the democratic group (Figure 5, democratic) the leader attempted, when a change of goal seemed desirable, to show its superiority over the already existing goal, but left the members free to make it their own goal or not. The red and black components of the valences in these representations indicate the amount of leader induction in the locomotion toward the new goal.

C. Style of Leader Induction of Paths: An example from group conversation follows:

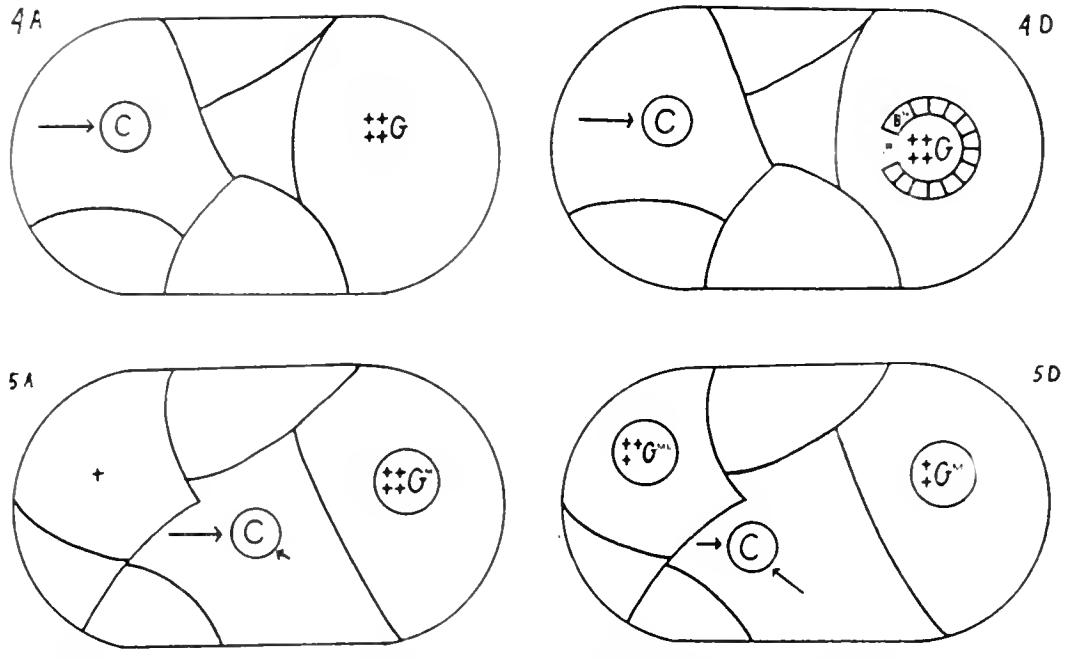


Figure 4. The Leader's Influence on Accessibility of Member's Own Goals
In the authoritarian (4 A) situation the leader (L) put up an impassable social barrier (B^L) of restriction around certain individual and group goals (G).
In the democratic situation (4 D) he helped the members bridge (L^{FR}) the barrier (B^{TA}) of the objective work difficulties of the task which was their goal (G).

Figure 5. Methods of Leader Induction of Goals
In the authoritarian (4 A) situation the leader (L) restricted locomotion toward member's own goals (G^M) and induced locomotion toward his goals for them (G^L), which were partially or not at all accepted by them. (Note: black + and → represent "own" goals and forces; red + and → represent "leader-induced" goals and forces).
In the democratic (4 D) situation the leader (L) made suggestions which were chosen as joint leader-member goals (G^{ML}) when they were more attractive (had a stronger "black" valence) for the child than his original goal (G^M).

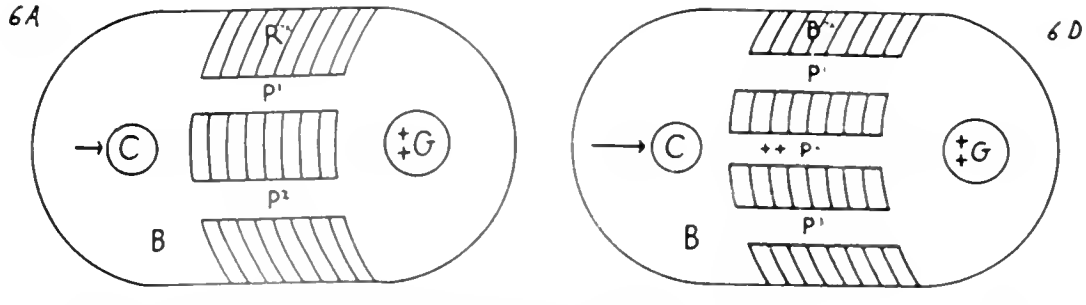


Figure 6. Style of Leader Induction of Paths
In the authoritarian (6 A) situation the leader (L) left only one possible path (P^2) open through the given task region (R^{TA}) of mixing plaster of Paris, blocking (B^L) other means (P^1) if they existed. Due to this leader induction the direction ($d_{L'}$) from region B to the goal (G) of finishing the mask was equal to the direction from B to P^2. ($d_{B,G} = d_{B,P^2}$)
In the democratic (6 D) situation the leader helped the members structure several alternative means of procedure (P^1, P^2, P^3) from which they were free to make their own choice of a distinguished path (in this case P^2).

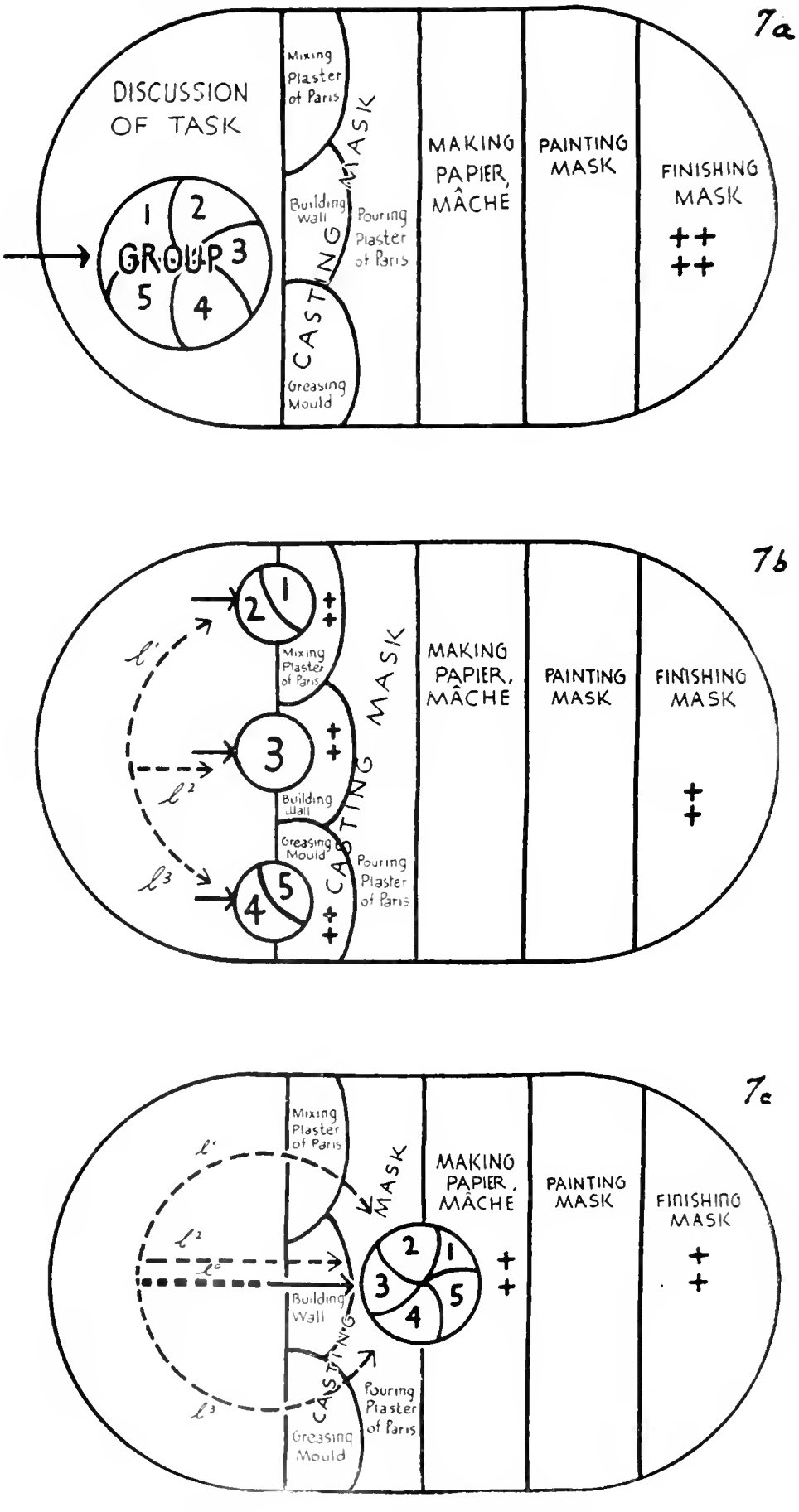


Figure 7. See top p. 115 for caption

Figure 7. Some Characteristics of Group Locomotion

a. In the region of "discussion" the members (1, 2, 3, 4, 5) planned the immediate activity steps ("mixing," "building," "greasing") which needed to be accomplished in order that the group might locomote through the region of "casting" in progressing toward the final goal of "finishing the mask."

b. As a result of the discussion the group broke up into three subgroups which, as planned, locomoted (l^1, l^2, l^3) into the three immediate activity regions ("mixing," "building," "greasing").

c. The three subgroups completed their interdependent activities to make possible the completion of the group locomotion (l^6) through the region of "casting" and the entrance into the new region of "papier mâché."

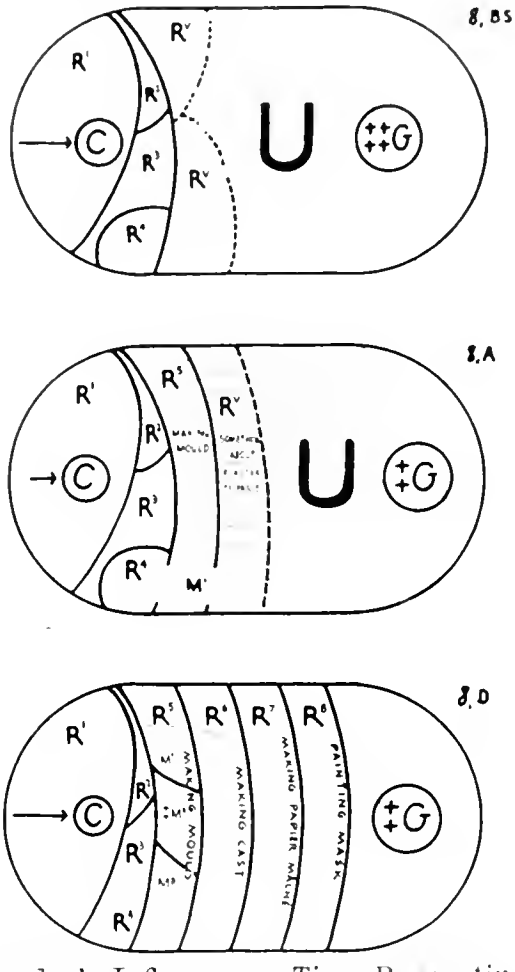


Figure 8. The Leader's Influence on Time Perspective

The beginning situation (S, BS) for both clubs as they met for the first time was that of an unstructured field (U) of activity regions between themselves and their goal (G). Only one or two very immediate activities (R^1, R^2, R^3, R^4) were clearly structured, such as sitting on the seats provided for them, etc. They had several vague ideas (R^5) about what was involved in the activity of mask-making, but the structure of the future really lay in the possession of the leader (L).

In the authoritarian (S, A) situation the leader (L) gave the children knowledge of only the first immediate step (M^1) through the first region (R^5) of locomotion toward the final goal (G) of the completed mask. Future steps were either vague (R^5) or unknown (U).

In the democratic (S, D) situation the leader (L) shared his knowledge with the members in planning for the future, so that a clearly structured work perspective (R^5, R^6, R^7, R^8) existed for each member, the various steps to the goal existing in the members' own cognitive structures rather than being the exclusive possession of the leader.

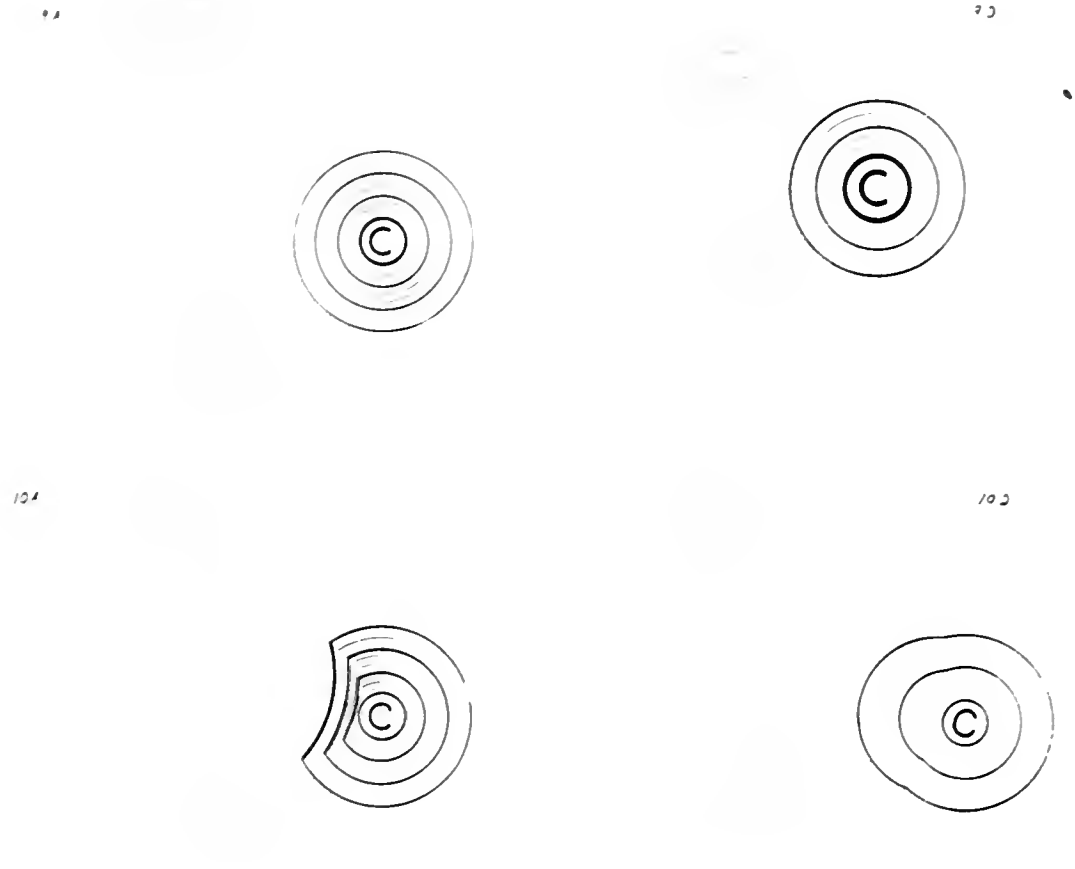


Figure 9. Social Powerfield Relationships: Intensity and Area

In the authoritarian situation we find that the intensity (indicated by the number of "lines of influence," broken lines, per unit of area) of the social influence of the leader (L) was about three times as great as the average child member, and over twice as great as the democratic leader. The area (indicated by the area of the powerfield representation) of social influence of the leader was also much greater than any child (C) in the group.

In the democratic atmosphere the intensity of leader (L) influence was less than twice as great as the average child (C) member, and the area of leader influence was also much nearer to the area of influence of each member than in the authoritarian group.

Figure 10. Social Powerfield Relationships: Qualitative Differences in the Influence of Overlapping Powerfields.

In the authoritarian club the overlapping of the member's (C) social powerfield with that of the leader (L) meant a weakening or depletion of social influence for the member.

In the democratic club the leader's (L) influence had the opposite effect of increasing the social powerfield of each member (C).

Autocratic Group	Democratic Group
Joe: "How can we keep the plaster of Paris from sticking to the clay mould? Is this powder O. K.?"	Dick: "Won't stick to the mould?"
Leader: "No, take that vaseline and rub it on carefully."	Leader: "I know of several ways you could fix that — you could grease it with vaseline, or use some talcum powder, or they use liquid soap sometimes. Maybe there are other ways, too."

Not only did the techniques of the leader differ in the two social atmospheres in regard to the inducing of group and individual goals, but also in regard to the induction of particular paths to the goals. As we see in the example from the conversation of the clubs the authoritarian leader made only one path through each work region accessible to the members, thus limiting in a different manner their space of free movement (Figure 6, authoritarian). In the democratic club, on the contrary, the leader always tried to give the members a choice of two or more alternative paths whenever he was needed for technical advice (Figure 6, democratic). Freedom of choice of the distinguished path to the goal was an important part of the space of free movement of the democratic group.

D. Some Characteristics of Group Locomotion: It will be interesting to digress here for a moment from the consideration of leader influence on space of free movement to an analysis of a typical example of group locomotion. This is not the place to define operationally or defend logically the use of such concepts as *group force, group goal or valence*, and *group environment*. But it does seem apropos to indicate some of the characteristics of a group path and locomotion as they differ from individual translocations. Taking the fourth meeting of the democratic group as our example we find that the work region of casting the clay mould is the immediate task ahead of the group (Figure 7a). In the discussion the task is subdivided into three subtasks - mixing the plaster of Paris, building a wall around the clay mould to retain the plaster, touching up the mold and greasing it. From previous group discussions we know that the path to the final group goal, the finished mask, is also further structured into the regions of making the papier mâché mask, and painting it (Figure 7a). The group locomotion through the "casting mould" region then proceeds from discussion to a division of group structure pattern into three distinct subgroup lo-

comotions through the three activity subregions (Figure 7b). One is tempted to ask at this point: "Do we now have one group or three groups?" In this simple case it seems clear that the club still exists as a whole and could be represented as such at each moment of locomotion if we were not interested here also in subgroup locomotions. The criterion which seems to work adequately here in determining the fact that we have subgroups rather than three separate groups is that of interdependence of policy formation. On the twentieth minute of the meeting the interdependence in function of the three subgroups again became very clear. The plaster of Paris was mixed, the retaining wall around the mould was finished, but the greasing of the mould was not quite finished, with the result that the rest of the group had to wait until all the subgroups were reunited, before the final casting of the mask and the entrance of the group into the next region was possible (Figure 7c). We see from this example that if we wish to speak of the "group motoric" we must think in terms of members and subgroups which can separate and engage in completely independent types of activities, unlike the motoric of the person which must remain united with the rest of the person and can engage in only a very limited number of simultaneous tasks. In its policy formation character, however, the group can be identified as a unity rather than a number of unrelated parts. It will be interesting later to consider the problems of "group force" and "group valence" as they relate themselves to this function of group locomotion.

E. The Leader's Influence on Time Perspective: To continue now with the consideration of the space of free movement of the clubs in the two types of social atmosphere we may consider the differences in activity perspective in the two situations. For both groups the structure of the situation at the beginning of the first meeting seemed to be roughly the same (Figure 8, beginning situation). The groups were both separated from their goal of mask-making by a large unknown (U) region: (the steps or means to the goal, which were in the "cognitive possession" of the leader). By the second meeting the situation differed rather markedly for the two clubs. An example from conversational record follows:

Autocratic Group	Democratic Group
Child: "What do we have to do to make them (masks)?"	Child: "Are masks hard?"
Leader: "A lot of different	Leader: "Would you like me to give you an idea of how

things. Right now we're going to mix clay and draw a pirate and Indian. You two begin on the clay. Tom, you draw the Indian, and you two work on the pirate.''

people sometimes make them?'' (Nods from children.)

''Well, first they decide on a picture to copy and make a mould of it with something soft like clay. Then usually they mix up plaster of Paris and pour over it to make a hard copy of the mould, and then . . .''

The future, in terms of the general steps from the present to the group goal, existed quite clearly in the cognitive structure of each democratic group member (Figure 8, democratic) after the general explanation of mask-making by the leader. Also the first step of that locomotion had been structured by discussion into a number of different possible steps from which the member might choose his own particular activity goal. For the authoritarian member the future perspective ended almost entirely with the immediate activity of that particular club meeting, (Figure 8, authoritarian). The future remained unknown, in the possession of the leader, and even the structure of the immediate situation was rigid, for the leader directed each member toward a particular activity goal which he structured for the member.

F. Social Powerfield Relationships: Every individual has a social powerfield of greater or lesser potency, depending upon the power which that person has to direct the behavior of others within his ''sphere of influence.'' The relative amounts of directing behavior (ascendance) by the leader and by the members affords us a first rough index of the relative intensities of the powerfields of the leader and the child member in the two clubs. By referring to the tables of leader action (Table 1) and child action toward the leader (Table 2) we find that the authoritarian leader initiated more than three times as much directing behavior as the average child (5.2:1.6) while the democratic leader was less than twice as directing as the child member (2.1:1.2). We will represent the intensity of a powerfield (Figure 9) by the number of lines of influence (dotted shading) cutting a given area. A second characteristic of the powerfield is its area. A particular powerfield may be very narrow or very widespread and still have the same intensity of influence within the given area. As a first approach to the measurement of area we have used the number of different activity

regions of club life in which the leader made his directive influence felt. From a sample of the conversational records we found that the authoritarian leader dominated twice as many regions as the democratic leader, and fifteen times as many regions as the authoritarian children. The extent of the social powerfields is represented by the area's of the circles in Figure 9 (p. 116).

An even more important factor in these social relationships is the quality of the leader's powerfield. A potent powerfield may be friendly or hostile in quality, for example. The effect upon the space of free movement of the influenced individual is quite different in the two cases. From the group log and the quantitative results the quality of the leader's powerfield in the two atmospheres was apparently quite different, and is indicated in terms of what it meant for the behavior of the child member (Figure 10, p. 116).

In the authoritarian group (Figure 10, authoritarian, p. 116) the leader's powerfield was dominating in nature and the overlapping of his powerfield with that of the group member resulted in a depletion of the social strength of the member, while the overlapping of the social powerfields in the democratic situation (Figure 10, democratic) resulted in an enlarged social strength of each member because of the helping influence of the leader's relationships. This hypothesis and its correlates needs to be tested by a number of more specific research techniques.[7]

The Leader and the Group Structure.— The results indicate that the leader occupied a rather different position in the structure of the two groups and influenced it differently in the two atmospheres. He occupied a much more inaccessible, dominating, and separated position in the structure of the authoritarian group (Figure 11, authoritarian, p. 133). His relationship to the other group subparts (child members) was definitely asymmetrical in that the relationship of the central region (the leader) to the other subparts was one of domination rather than of symmetrical (two way) interdependence. The flow of influence was predominantly in one direction: from the central region outwards. It will be noted from the topological interpretation that the democratic leader (Figure 11, democratic, p. 113) also occupied the most central position in the group stratification, but that he was a much less separated part of the group structure, accessible to all members. Most important of

[7] A study of changes in social powerfield relationships of preschool children in situations of friendship and enmity is now being carried out by Eric Wright, under the direction of Kurt Lewin.

all, his relationship to the other subparts was much more symmetrical or interdependent, with the flow of influence operating in both directions. The findings on submissive, objective, and ascendant behavior indicate this quite clearly (Table 1).

Within the group-field, subgroupings of members existed. In one case the particular constellations were dictated a third of the time by the leader (Figure 12, authoritarian, p. 133) and in the other, the democratic group (Figure 12, democratic, p. 133) the subgroupings were spontaneously formed by the members involved.

Not only was the dominating powerfield of the authoritarian leader influencing the co-worker relations of the members as indicated above, but the great dependence of each member upon his relationship with the leader, or central region, made the most potent subgroup relationship of each authoritarian group member his connection with the leader (Figure 13, authoritarian, p. 134). The member's action in any child subgrouping was continually overlapped and influenced by his membership in this potent child-leader subgroup. The implications of this situation for the interpersonal relations of the members will become clearer later. In the democratic group (Figure 13, democratic) each child also had an important relationship with the leader in his central advisory position, but, from moment to moment, as his spontaneous subgroup memberships shifted, he was in member-member groupings of greater potency for his behavior than the child-leader connection which lacked the dominating character of the authoritarian group situation.

The Leader and the Personal Structure of the Member.— We may represent, as Lewin (25) has, the person as consisting of regions of different degrees of "personalness" or inaccessibility to other persons. Social approaches vary greatly in the depth to which they affect the regions of the individual being approached. Until we have summarized the next section on the reactions of the members to the leader we can say little about this factor; but even the number of entrances into the personal structures of the members by the leader, and the ratio of leader's social approaches to child approaches, is of considerable interest for this later interpretation. This relationship is indicated (Figure 14, authoritarian, democratic, p. 134) in terms of the relative number of social approaches of the leader and child in the two club atmospheres. Some differences in effect upon the personality structure of qualitative differences (friendly and impersonal dominating approaches) as well as quantitative differences are indicated in the next section.

Summary of Interpretations

We may summarize briefly the dynamics of the leader's relation with the club members in the two atmospheres, as interpreted from the quantitative results and group log:

1. In the authoritarian group the leader frustrated individual goals which did not coincide with his own, and induced his own goals and paths by the strength of his social powerfield. In the democratic group he helped the members in their locomotion toward own goals by making the most difficult barriers more passable; the democratic method of inducing goals and paths was to point out what were considered more desirable goals for the members for them to choose or reject from the alternative before them.

2. The democratic leader gave his group "cognitive space of free movement" by putting the future in their own possession (giving them time perspective), and gave them freedom in the momentary situation by indicating a variety of "means behaviors" from which they could choose. In the authoritarian situation the leader kept the future in his own possession and induced each member's immediate goal by barring all but one locomotion.

3. The strengths of the leader and member social powerfields were more disproportionate in the authoritarian group, and in quality, the overlapping of the member's social power by the leader's, subtracted from the influence of the member in the authoritarian situation, while in the democratic group it enlarged the member's sphere of power.

4. The authoritarian leader had a much more inaccessible, dominating position in the group structure than the democratic leader. The autocratic leader also tended to structure the co-worker relationships of the subgroupings and to maintain as the most potent subgroup membership of any member, his dependent relation with the leader. The democratic group members were free to form their own subgroups and were less dependent upon the leader relationship.

5. By his greater number of approaches the authoritarian leader entered the private regions of each member more often than did the democratic leader.

All of these types of member freedom in the experimental club situation may perhaps best be summarized in a representation (Figure 15, authoritarian, democratic, p. 136, 137) of the differences existing in the total space of free movement of members from each of the clubs. The areas of freedom and of inaccessibility in the two atmospheres present a striking contrast with each other

and with the first meeting (Figure 15, Beginning situation). What this meant to the member in his personal relations with the leader is our next interest.

The Atmosphere Created and Its Social Resultants

The results so far have only indicated that the leader behaved differently in the two groups in his attempt to create a democratic and authoritarian situation for the two clubs. We have observed what might be called the "objective" sociological nature of the situations, but not their psychological meaning for the group members involved. Children from a more or less restricted milieu might be expected to interpret the same "objective atmosphere" of authority or democracy quite differently. It is important, therefore that we turn immediately to the reactions of the club members toward the leader to get some clues as to their evaluation of his behavior. We have already mentioned that the leader of the authoritarian group attempted to remain impersonal in his firmness at all times rather than to be overtly hostile in any way. The group log seems to indicate that it was the "general situation" rather than just the adult leader that the children labeled cognitively as more or less restricting in nature. Such remarks as: "We're a little more *independent* than you are," "It was stricter than the Girl Scouts," "It was different in the other club," are rather important indicators of the psychological differences of the two atmospheres for these children. With the differences of the two atmospheres *for the members* established, we will be ready to turn to the social resultants in terms of the relationships between the regular members of the clubs, and to some of the factors of individual difference between the members of the same group.

Relation of the Groups to the Leader

Tables 2 and 3 indicate the volume and nature of the social actions of the children toward the leader as recorded by the social interactions observer, and as tabulated from the stenographic records. Because the omission of the leader's remarks from the conversational records made the specific reactions of the children to them hard to identify, only the initiated actions toward the leader were tabulated in the stenographic analysis. Differences in proportions which may appear in the categories of the two tables are largely due to the necessity of using somewhat different behavior criteria in reading the conversation from those which could be used

in observing the actual behavior in its whole context of gestures, facial expressions, and postural attitudes. The observer of social interactions found it possible to get down a large number of ver-

TABLE 3

SOCIAL ACTIVITIES OF THE CHILDREN TOWARD THE LEADER

Categories of Behavior	*Number of Incidents of Behavior*		*Per Unit of Interaction Possibility*		*Per Cent More (+) or Less (—) Behavior Toward Leader Than Average Child to Child Action*		*Per Cent Total Social Actions Toward Leader*	
	A*	D**	A	D	A	D	A	D
Total social acts of child to leader	639	330	7.50	4.10	+ 60	+ 31		
Initiated social approaches	243	194	2.80	2.40	+ 21	+ 60	38	59
Social responses	396	136	4.70	1.70	+ 99	— 4	62	41
Total ascendant actions	189	124	2.20	1.50	— 34	— 21	29	38
Initiated ascendant approaches	141	104	1.60	1.20	— 36	— 12	22	32
Total submissive actions	256	134	3.00	1.60	+614	+176	40	40
Total objective actions	30	24	0.35	0.29	+169	+107	4.7	7.3
Ignoring behavior	164	48	1.90	0.59	+ 61	— 5	26	15

*Authoritarian
**Democratic

batim comments by the leader, but not consistently enough for quantitative analysis such as was possible with the stenographic records.

Total Social Actions Toward the Leader.—The authoritarian children were not quite twice as active (7.5:4.1) as the democratic children in the number of social actions made toward the leader (Table 3). While 60 per cent more social actions were directed toward the authoritarian leader than if he had been a child member on an equality basis, 31 per cent more than this base were

received by the democratic leader. An interesting reversal of these proportions takes place, however, when the actions *initiated* by the children toward the leader are separated from actions of responding to him. Although per unit of interaction-possibility the initiated approaches are of nearly the same relative frequency (2.8: 2.4), this represents a larger proportion of the activity of the democratic group (59 per cent) than of the authoritarian group (38 per cent). The democratic leader was approached about 60 per cent more than an average fellow member was, as contrasted to 21 per cent above that base for the autocratic leader. If we turn to the "social response" category we find the authoritarian members responding to leader approaches about three times as often as democratic members (4.70:1.70) and note that the authoritarian leader was responded to twice as often (+99 per cent) as an average member, while the democratic leader seemed to be on an equality basis (+4 per cent) in this respect. Evidently the democratic children were relatively more active in initiating actions toward their leader, and the autocratic children spent more of their actions responding to him. The conversation analysis gives essentially the same results (Table 4).

Ascendance Toward the Leader.— Neither group was as ascendant toward the leader as he would have been had he been of equal membership status. The authoritarian group member was 34 per cent less ascendant toward the leader than toward a fellow member, and the average democratic group member 21 per cent less so. While the authoritarian group directed slightly more ascendant actions per unit of interaction-possibility toward the leader (2.20: 1.50), these actions represent a higher percentage of the total actions by the democratic group (38 per cent) than by the authoritarian group (29 per cent). Evidently the democratic group members were in more of a position of equal footing with their leader in directing behavior than the authoritarian members. Another symptom of this equality position in the democratic group is the finding that the democratic group *initiated* a larger proportion of their ascendant actions toward the leader than did the authoritarian group. Per unit of interaction-possibility the authoritarian group made directing approaches slightly more often (1.6:1.2), but while authoritarian group members approached their leader ascendantly 36 per cent less often than they did an ordinary member, the democratic members were only 12 per cent less active in making ascendant approaches toward him than toward fellow members.

TABLE 4

INITIATED CONVERSATION OF MEMBERS TOWARD LEADER

Category	*Number of Incidents*		*Per Unit of Interaction Possibility*		*Per Cent of Initiated Action*		*Per Cent of Total Initiated Ascendance*	
	A*	D**	A	D	A	D	A	D
Total initiated social action	251	192	2.70	2.20				
Initiated ascendant actions	63	53	0.75	0.62	25	28		
Dominating	34	4	0.27	0.05	14	2	54	4
Friendly	8	13	0.09	0.15	3	7	13	25
Objective	21	36	0.24	0.42	8	19	33	71
Submissive initiated	124	64	1.50	0.75	49	25		
Objective initiated	64	75	0.73	0.89	26	47		

*Authoritarian

**Democratic

A more fruitful insight into the ascendance of the two groups toward their leaders is given by the stenographic analysis of three components of ascendance. "Dominating ascendance" (e. g., aggressive demands for attention, hostile criticism), "friendly ascendance" (e. g., asking or offering co-operation), and "objective ascendance" (e. g., constructive suggestions, helpful work suggestions) were tabulated in separate categories. With some surprise we found that 54 per cent of the ascendant approaches of the authoritarian children to their leader fell in the dominating category (largely aggressive demands for attention) as against 4 per cent by the democratic members. The friendly ascendance (13 per cent as against 25 per cent) and objective ascendance (33 per cent as against 71 per cent) categories both show higher percentages for the democratic group. More qualitative observations lead the experimenter to believe that the higher percentage of dominating ascendance by the authoritarian members (who we will see were also more submissive) is an indication of a somewhat ambivalent attitude toward the leader, and of the immediate "style of living" of the authoritarian group in its conversational exchanges. Conversation, it will be remembered, was not restricted to the extent that activity was, and therefore should give a better indication of the real personal feeling of the members.

Submission Toward the Leader.— Table 3 indicates that the au-

thoritarian group made two submissive acts toward their leader to every one made by the democratic group members. As would be predicted from the children's lack of previous knowledge of the activity, the groups were much more submissive toward the leader than would be expected on the basis of leader-member equality status. The authoritarian children were over six times (614 per cent) as submissive toward their leader as toward the average member; the democratic group members were nearly twice as submissive (176 per cent) toward the leader as toward the average fellow member. The conversation analysis indicates that 49 per cent of the initiated actions by the authoritarian group toward the leader were submissive as compared to 25 per cent by the democratic group.

Figure 16 shows the tendency of the authoritarian group members to become more dependent as club life developed. The leader did not seem to succeed quite so well in making himself progressively unnecessary in the democratic group. We cannot take submissive behavior as a perfect criterion of dependence however. For instance, we have indications that the authoritarian members hesitated to make social approaches to the leader and thus we might expect that the authoritarian members would be more hesitant to ask for direction when they felt it was needed than would the more spontaneous democratic group members. The nature of the activity for the particular club period is greatly responsible for the large day by day fluctuations in the trend of the percentage curves. For example, the beginning of a new unit of activity demanded greater dependence on the leader than a later meeting when things were "under way." It is interesting to note that for two meetings (seventh and eighth) after their work disappointment of the broken mask the democratic group showed a larger proportion of dependence upon their leader than at any other time.

Matter-of-Fact Behavior Toward the Leader.—Matter-of-fact actions did not play a very large part in the total social actions of either of the groups toward the leader or toward each other. The democratic group displayed a somewhat larger proportion of this behavior (7.3 per cent as against 4.7 per cent) than the authoritarian club. The authoritarian group shows 169 per cent more of such behavior toward the leader than would have been expected toward an average member in that group (chiefly because of the very small percentage of such activity of the authoritarian members toward each other), while the democratic leader receives 107

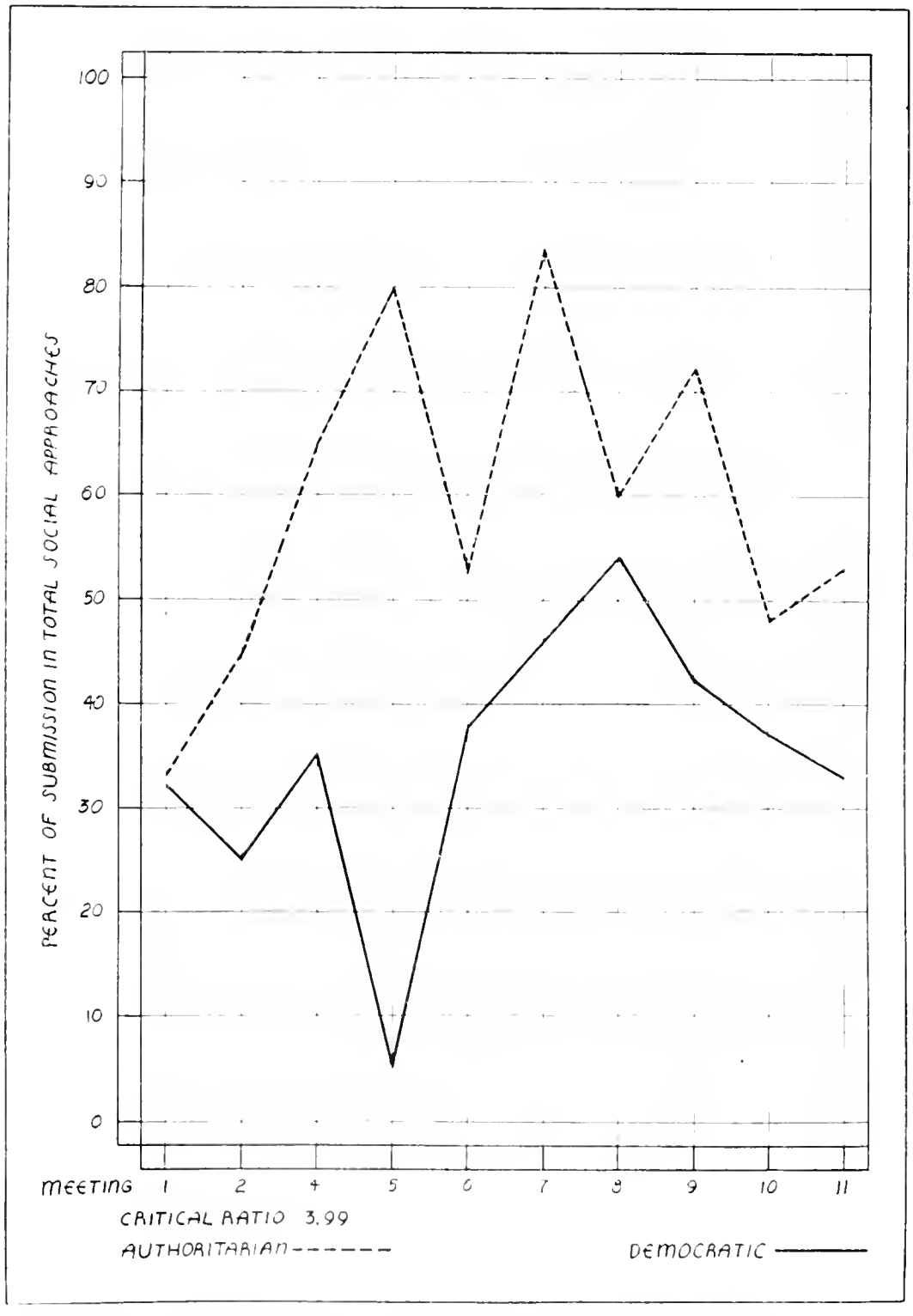


Figure 16. Submissive Approaches of Group Members to Leader

per cent more matter-of-fact actions from the average member than would have been expected had he been a fellow member of equal status.

The data from the conversation analysis tell a somewhat different story here. The democratic group is here seen to be somewhat more objective per unit of time (.89: .73) as well as in percentage of initiated social actions (49 per cent compared to 25 per cent). The number of actual incidents tabulated in this category is larger for the conversation analysis than for the interactions analysis. On investigation of the criteria used to judge such behavior the investigator discovered that some of the behavior which the interactions observer regarded as an objective type of work-minded ascendance was judged by the experimenter, in the conversation analysis, to be matter-of-fact behavior. In reading the conversation records the investigator noticed that fact-minded behavior seemed to have at least two rather different psychological meanings. Sometimes it seems to denote a feeling of social security by the member so that he could afford to be fact-minded rather than person-minded; and again such behavior seemed to indicate a "not-ready-to-be-friendly" attitude related to greater social distance.

Ignoring of Social Approaches by the Leader.— Although this category might be regarded with justification as a type of ascendant behavior it was separated in this research because the experimenter felt this type of behavior might present an index of "inner hostility" or resistance to authority which would not appear in the overt actions because of the impersonal, rather friendly rapport which the leader maintained with the authoritarian members. The observations in this area do seem to have rather clearly differentiated the two groups. The authoritarian group members refused to respond about three times (1.9: .59) as often as the democratic group. This represented 26 per cent of the social actions toward the leader by the authoritarian group as compared to 15 per cent of them by the democratic group. While the democratic members ignored a social approach by the leader less often (—5 per cent) than they did the approaches of a regular member of the group, the authoritarian members refused to respond 61 per cent more often to the leader than they did to fellow members.

Comments of the Group Members.— The post-experimental interviews were unsatisfactory in this present study, chiefly because the leader could not arrange for an interviewer who knew the chil-

dren well, but had not served in the leadership capacity of the experimenter. The children, especially the authoritarian group members, were naturally not as willing to express their feelings about the nature of the group atmosphere to the leader as they would have been to a neutral, friendly person. The latter procedure has proved very successful in the second, more elaborate study now being completed. The present investigator did, however, chat with each of the group members for a short time several months after the conclusion of the experimental club meetings. In talking about their home, school, and organized group life, an attempt was made to get comparisons with the club situation. Though far from satisfactory, the following comments in regard to the club atmosphere are of some interest:

Authoritarian Group

Sarah was very taciturn but commented, "It was all right, we had a good time. I noticed you were kind of different in the two clubs. (How?) Oh, I don't know, I haven't got a very good memory. It was stricter than the Girl Scouts." (She was the member who was transferred.)

Jack: "It was a lot of fun. We might have had more fun making some different things like the other group did (frustration of goals), instead of the same sort of thing all the time. I had my say all I wanted to." (Free speech.)

Tom was hesitant to bring the club situation up and turned to other things several times (he was the first scapegoat). He said, "Well, I think maybe the teacher understands us a little more. It was O. K., we had a good time — but we might have planned things a little more."

Joe (second scapegoat): "You got a little too easy some times when fighting started (leader should have protected him?). I guess our school is a lot different from the regular schools, we are freer in the schoolroom."

Harry: "We had a Cub leader that was swell, he wasn't very strict. I like to have leaders that aren't very strict. Of course he can't let you run over him or you don't get things done. I know Miss ——— who is too easy. I liked the club. I made a mask of my own at home afterwards."

Ray (who replaced Tom and was very quiet): "I had a good time. It's hard to say just how it was, just sort of medium between strict and O. K. Harry bullies people."

Democratic Group

Dick: "It was fun. We put the pirate mask on the puppet stage we made. Well, it was just right for a club."

Sue (member who was transferred): "It was more fun at first where I knew the kids and we worked together. It was

different in the other club, they were kind of fighty."

Jim: "Yeh, sure it was swell. I've got the little turtle at home. No, it was freer than in school."

Mack: "It was sure fun painting. That turtle (his idea) was a lot of fun to make. No, it was sure different from school."

Helen: "It was just a lot of fun. Maybe we didn't do so well sometimes but I think the club was a good idea."

Summary of Relation of the Groups to the Leader.— 1. The authoritarian group made nearly twice as many social actions per unit of time toward their leader. The social actions of the authoritarian group tended to be responses rather than initiated approaches. The latter represented a larger proportion of the relations of the democratic group to their leader. The democratic leader received about a third more social actions than the average member while the authoritarian leader received about two-thirds more than this base.

2. Per unit of time there was no significant difference between the number of ascendant actions of the two groups to the leader. A larger percentage of the ascendant actions toward the leader were initiated by the members in the democratic group, and were responses to leader approaches in the authoritarian group. Both groups were less directing in their behavior toward their leader than would have been expected had he been a member of equal status. The democratic leader was treated more nearly equal in this regard, especially in initiated approaches to him.

3. In pattern of ascendance the behavior of the authoritarian group was largely dominating or aggressive in nature (especially demands for attention), while the ascendance of the democratic members was of a friendly and work-minded nature.

4. Both leaders received considerably more submissive behavior than the average member of the group, over six times as much by the authoritarian children and nearly twice as much from the democratic members. Per unit of time, the authoritarian group members made twice as many submissive actions toward their leader as the democratic members.

5. Developmentally we found a tendency for the authoritarian group to become progressively more submissive as indicated by percentage of initiated submissive approaches to the leader, while the democratic group members wavered between less and slightly more submission with a temporary rise in dependence after a work accident in the seventh meeting. The differences were significantly

in favor of less submission toward the leader by the democratic group members.

6. Although a larger proportion of the actions of the democratic members toward their leader was matter-of-fact, the authoritarian leader received a higher percentage (169 per cent) of such actions, in relation to the average member comparison than did the democratic leader (107 per cent). The difference in number of actions per unit of interaction-possibility was insignificant.

7. The members of the authoritarian group ignored a social approach of the leader three times as often as the democratic group members. In the authoritarian group this represented considerably more refusal to respond to the leader than to the average member, while the democratic leader was treated as an equal member of the group in this respect.

8. The comments of the children seemed to bear out the more quantitative results in indicating that the authoritarian atmosphere cut down their freedom in regard to setting up spontaneous goals which could be wholly their own, planning for the future, and feeling secure and independent in their membership status. The memories of the members in the democratic group seemed to center more on the pleasantness of the activity life.

Further Interpretations of the Psychological Atmosphere

Our qualitative and quantitative analysis of the behavior of the members toward the leader in the two club atmospheres seems to indicate that the psychological situations *for them* resembled in essential characteristics the situations which we described objectively (Figures 4 to 16) in the analysis of the leaders' behaviors in the two clubs. The greater dependence of the authoritarian group members upon the leader for direction of behavior is clearly indicated in the results just summarized. The greater dependence of the authoritarian members upon leader direction existed (Figure 8, authoritarian, p. 115) for immediate goal actions as well as for long range planning and locomotion toward the end goals of club life. This dependence, we noted (Figure 10, authoritarian, p. 116), resulted in a depletion of the strength of the social powerfield of the members in the regions where they overlapped that of the leader. This was in direct contrast to the helping influence of the democratic leader's powerfield (Figure 10, democratic) as he acted to make the members more independent of his direction and goal induction. Several interesting reactions of the members to these

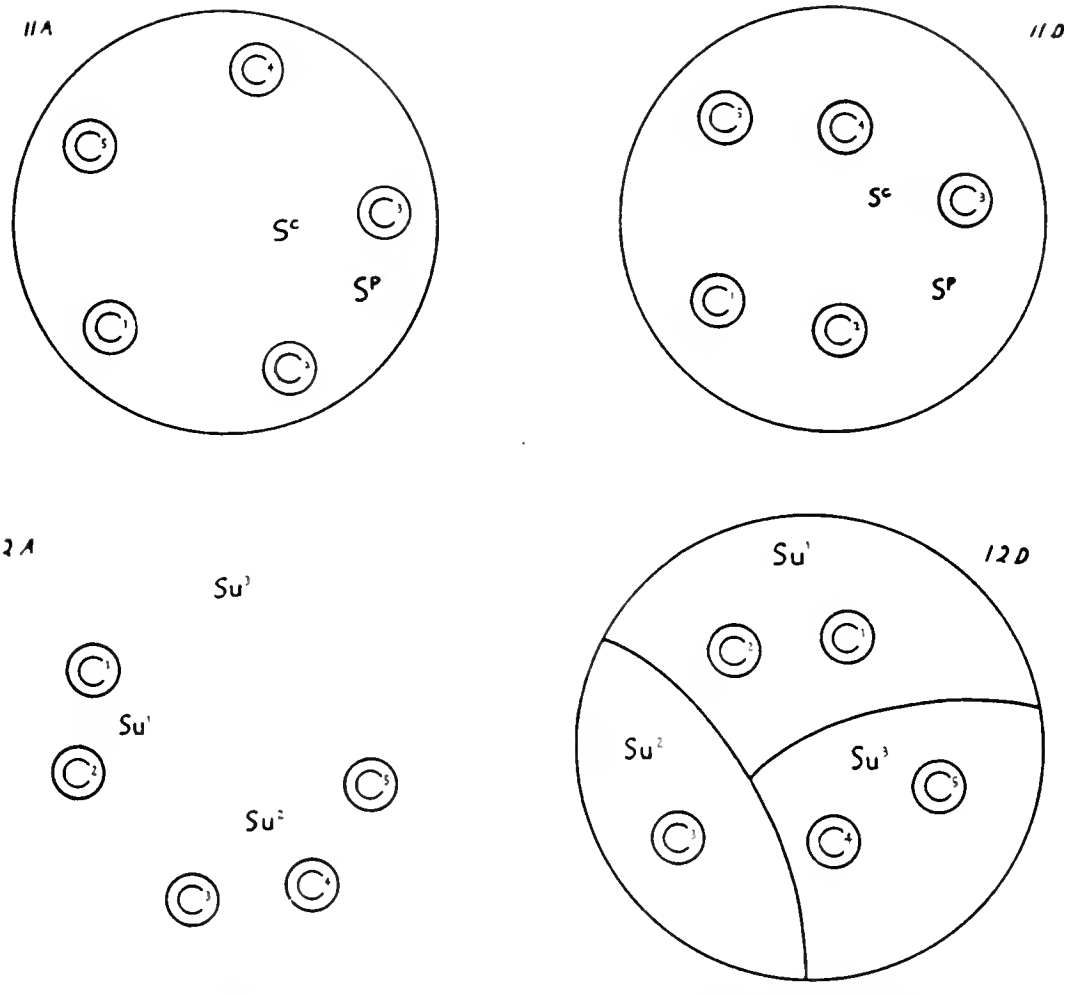


Figure 11. The Leader and the Group Structure: Leader Centrality and Accessibility.

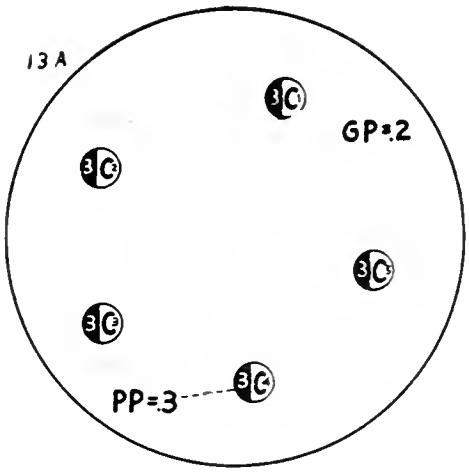
In the authoritarian situation the leader (L) dominated the area of group centrality (S^c) or "policy formation," with little dependence upon the influence of child members (C^1, C^2, C^3, C^4, C^5) who were kept in a position of peripheral status (S^p) by the barrier (B) of the leader's social power.

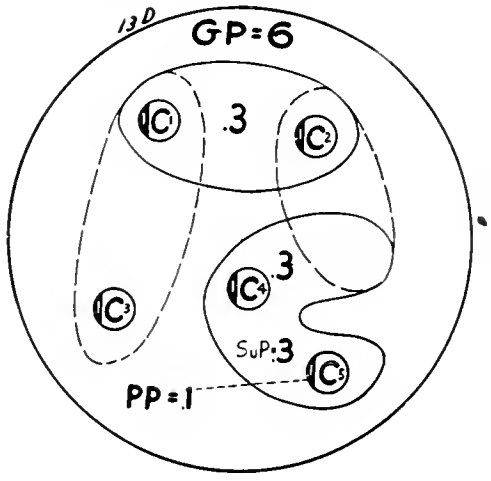
In the democratic atmosphere, although the leader still had the most central position, the region of group centrality (S^c) was accessible to all members, and a symmetrical interdependence existed between leader and members.

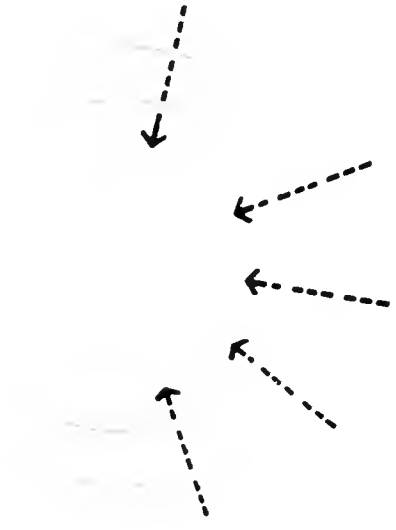
Figure 12. The Leader and the Group Structure: Spontaneity of Subgroup Organization

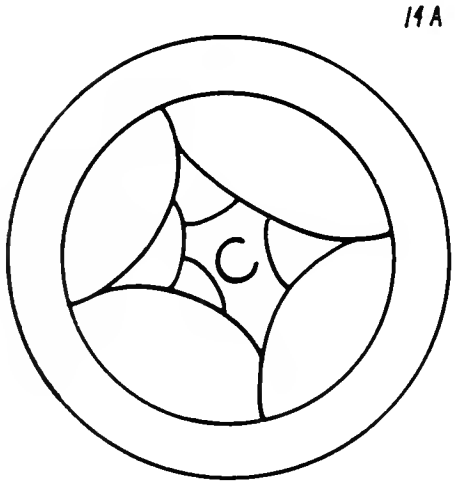
In the authoritarian situation the activity subgroups (Su^1, Su^2, Su^3) were structured by the leader (red or "induced" structure lines) who told each member with whom to work.

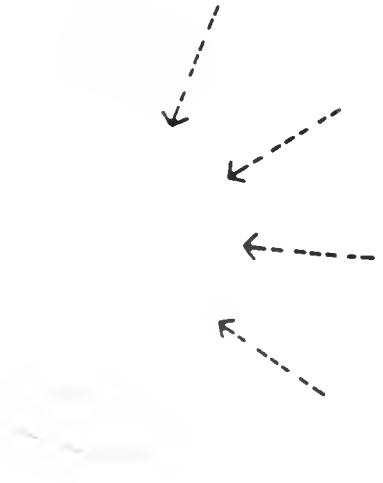
In the democratic group's life subgroups (Su^1, etc.) were formed spontaneously by the mutual wishes (black or "own" structure lines) of the members involved.


13 A
GP=2
PP=3


13 D
GP=6
.3
.3
SuP:3
PP=1




11 A
C



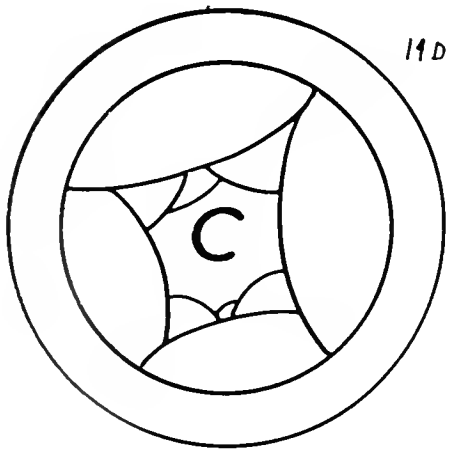

11 D
C

Figure 13. The Leader and the Group Structure: Relative Potencies of Group Membership, Subgroup Membership, and Ego-Goals

In the authoritarian atmosphere the dependent child to leader relationship made the most potent behavior determinant that of the child's membership in this leader-child subgroup, (Subgroup Potency = 5). Spontaneous group loyalty or "belongingness" was not a very potent factor (GP = 2), and the valence of personal, nongroup goals was relatively high (PP = 3) for each child (C).

In the democratic group structure "belongingness" to the club as a whole was the most potent behavior determiner (GP = 6); spontaneous subgroup memberships (not leader-dominated) were less potent (SuP = 3); and personal, nongroup-centered interests, played little part (PP = 1) in the determination of behavior.

Figure 14. The Leader and the Personal Structure of the Members

In the authoritarian situation the asymmetry of the leader-member relationship is indicated by the relative number of social approaches (broken arrows) of leader (L) to child (red) and of child (C) to leader (black).

In the democratic atmosphere the symmetry of personal relationships is noted by the equality in volume of social approaches.

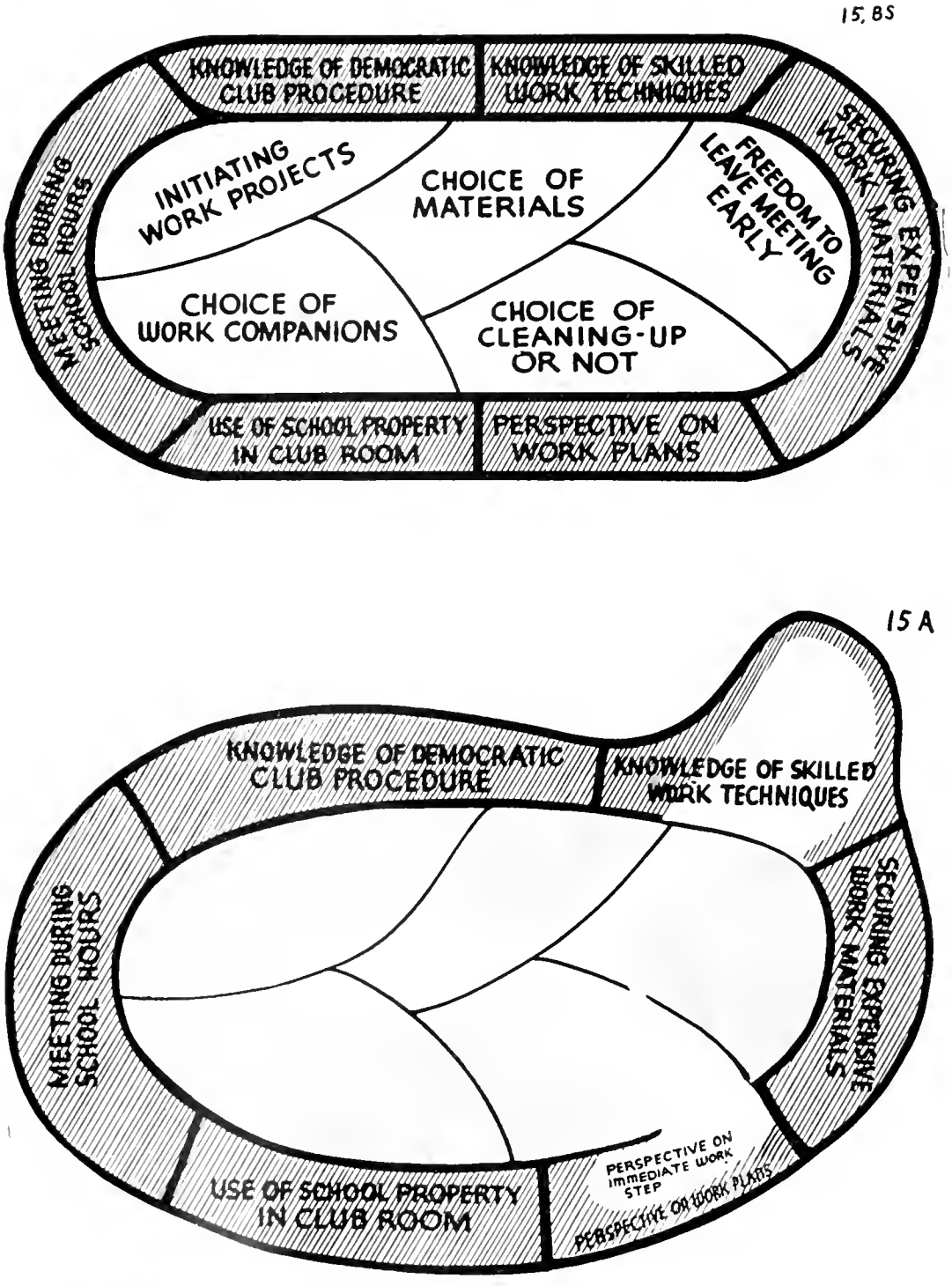


Figure 15. The Leader and the Club Space of Free Movement

In the beginning situation for both clubs many regions were inaccessible (barred areas) due to lack of knowledge or lack of ability of the members; in other regions (unbarred areas) the members enjoyed complete freedom.

As the authoritarian atmosphere developed the influence of the leader (red) reduced the initial freedom of the members in most regions (cannot leave meeting until dismissed, assigned work companions most of the time, etc.). In only two major regions did leader influence expand the freedom of the members: they learned new work techniques under his direction; and they gained a short work perspective, usually only as far as the scope of the immediate work step.

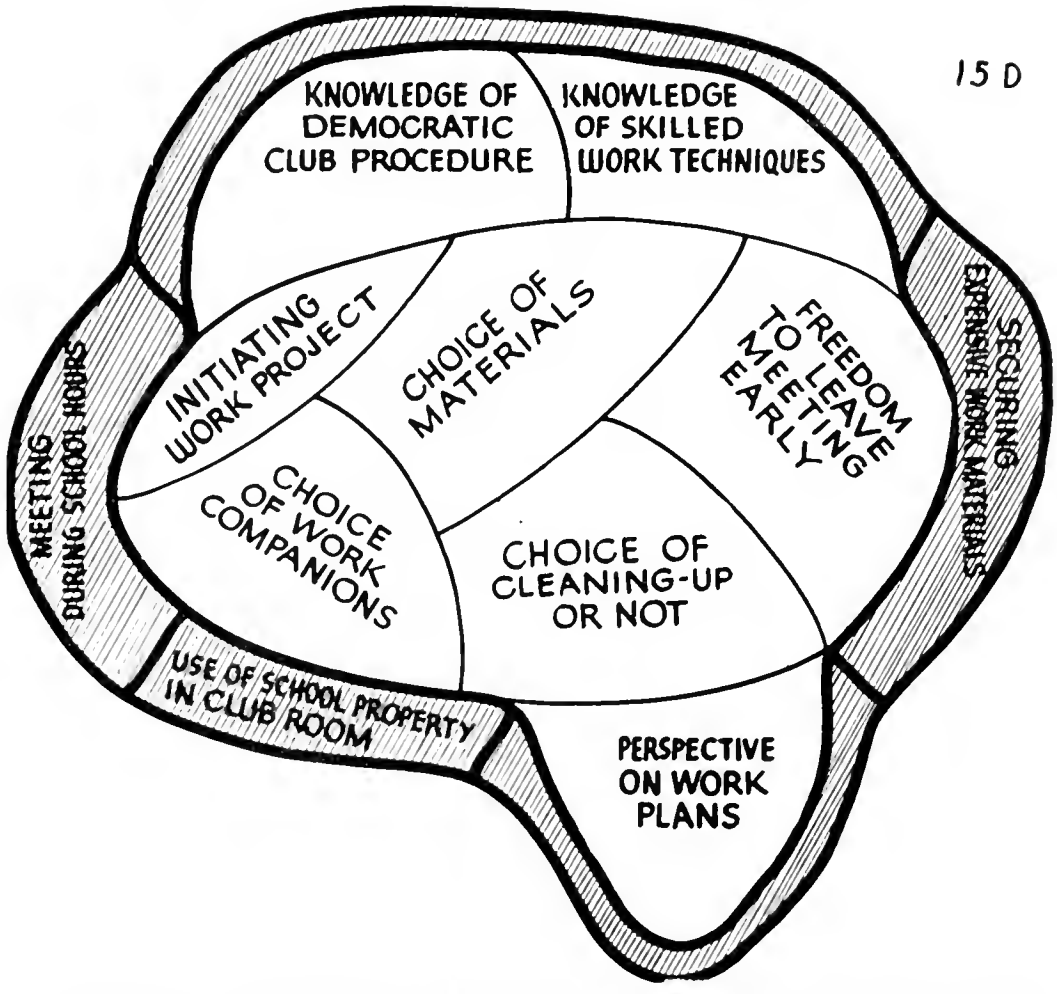


Figure 15. The Leader and the Club Space of Free Movement (Continued)
In the democratic situation initial freedoms were left unhampered by the leader, who, by his group participation, helped (red vectors) the members to push back the barriers of lack of knowledge and ability to gain new important areas of freedom (work skills, social skills of democratic procedure, and work perspective or "freedom into the future").

17A

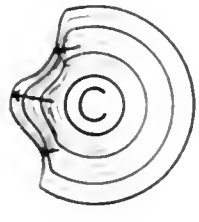
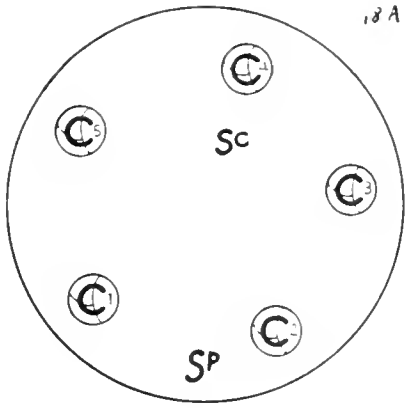
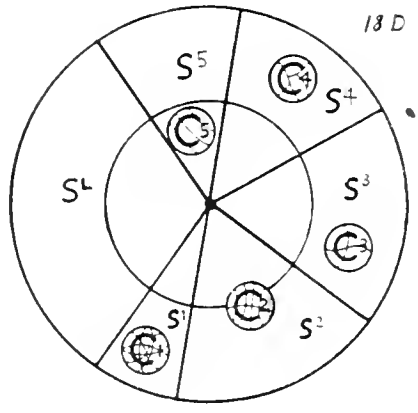
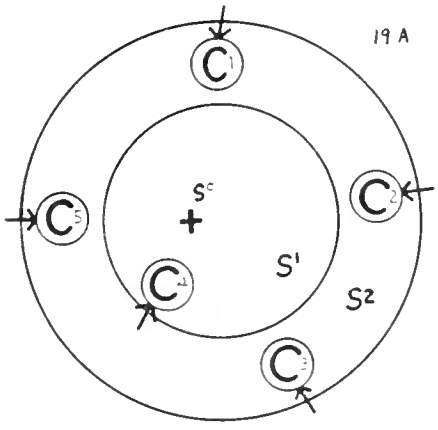
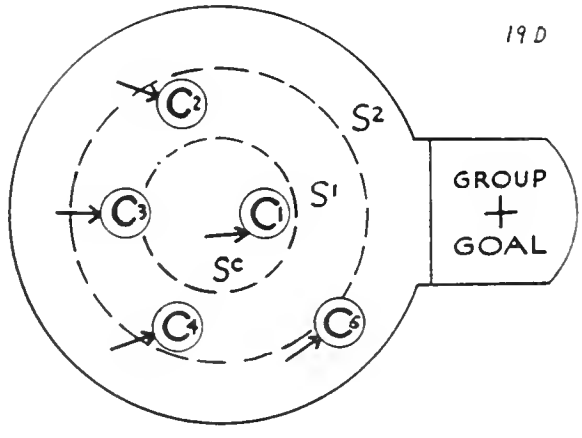


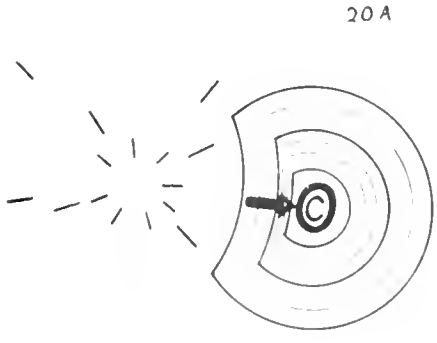
Figure 17. Attempts to Increase Space of Free Movement
In the authoritarian situation the members (C) made attempts to increase the scope of their weakened powerfield in relation to the leader (L) and thus to achieve a greater equality of social relationship.
In the democratic situation (cf. Figure 9, democratic) a satisfactory equality seemed to exist already.


18 A
Sc
Sp


18 D
S5
S4
S3
S2
S1


19 A
Sc
S1
S2


19 D
S2
S1
Sc
GROUP
+
GOAL


20 A

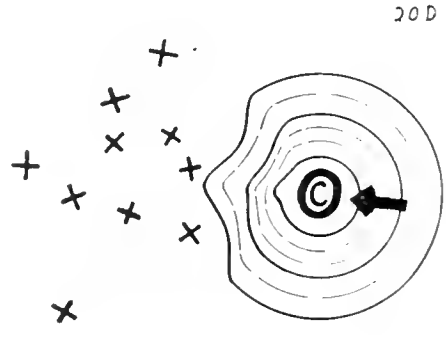

20 D

Figure 18. Individuality and Uniqueness of Position in the Group Structure
In the authoritarian situation each child (C^1, C^2, C^3, C^4, C^5) had the same personal structure ($C^1 = C^2 = C^3 = C^4 = C^5$) as far as the leader (L) was concerned, no attention being given to individual differences in his relationships with the child members. Neither were the children able to achieve any unique status in the group structure, all being treated as similar peripheral (S^p) subparts of the group.
In the democratic atmosphere the individuality of structure of each child was recognized ($C^1 \neq C^2 \neq C^3 \neq C^4 \neq C^5$), as well as his unique status of a more central nature in the group structure ($S^1 \neq S^2 \neq S^3 \neq S^4 \neq S^5$).

Figure 19. Status Centered and Group-Centered Efforts
In the authoritarian group the work efforts of each child (C) were competitively oriented toward gaining a more central social status (S^c).
In the democratic situation, where centrality of status (S^c) was already accessible to all members, individual efforts were directed more toward the cooperative achievement of a group goal.

Figure 20. Attempts to Maintain the Present Space of Free Movement
In the authoritarian situation entering the powerfield of the leader (L) i. e., approaching him spontaneously) had for the child (C) a negative valence $(-)$, which was strongest in the areas of greatest leader power (i. e., nearest to center of the powerfield).
In the democratic atmosphere spontaneous entrance into the powerfield of the leader (L) had a positive valence $(+)$ because of the helping rather than depleting effect of the relationship, with greatest help being available in the regions of greatest leader strength.

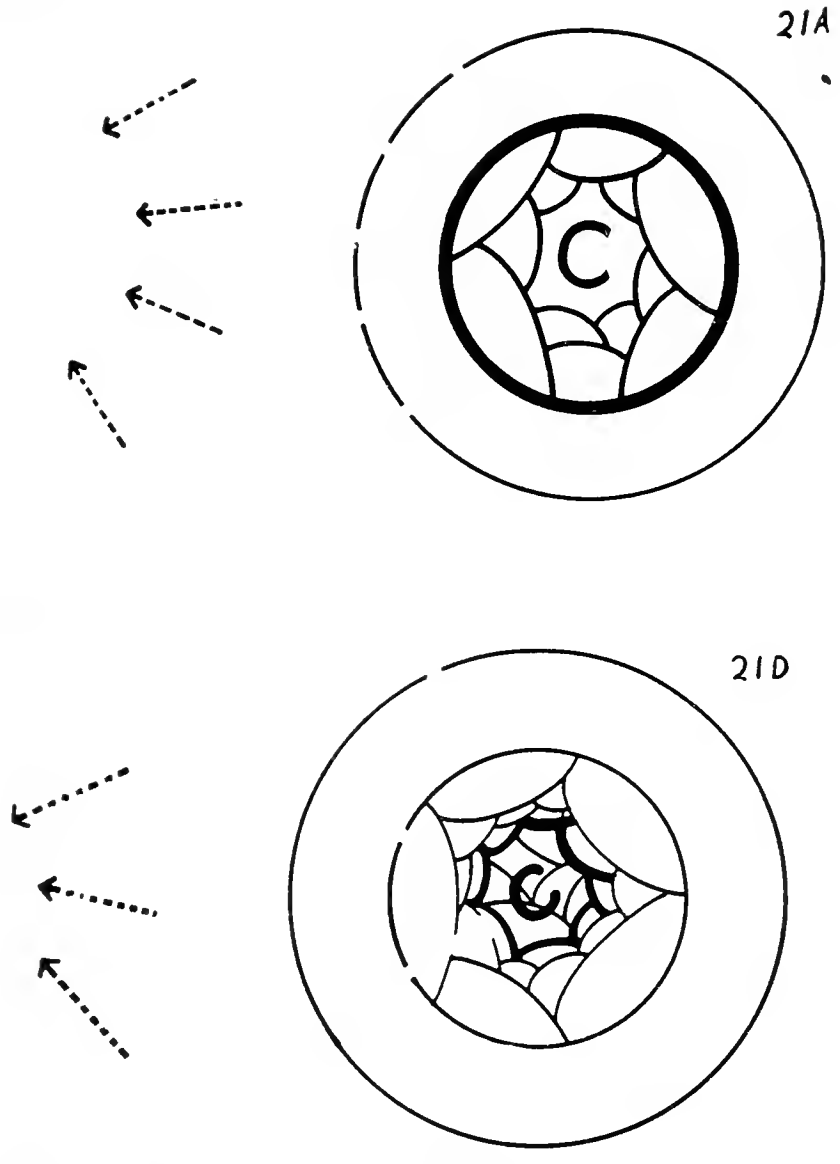


Figure 21. Attempts to Preserve "Personal Privacy"

In the authoritarian situation both the member (C) and the leader (L) built up strong barriers to "personal intrusion" (social approach represented as broken arrow) around quite peripheral layers of the person.

While in the democratic atmosphere deeper layers of both the leader (L) and child member (C) were accessible to one another (as represented by the greater depth of social approaches before an impassable wall was reached).

differences in leader activity have been noted in the preceding group of results and are here briefly interpreted.

Attempts to Increase Space of Free Movement.—The much greater preponderance of dominating ascendant conversation toward the leader in the authoritarian situation may have been partially because of the "immediate style of living" of the group. Unrestricted verbal expression also made aggressive conversation a rather good index of the reactions of the members to the club situation. Any reaction, no matter to whom, would tend to be expressed through this unrestricted verbal channel. Although the members in the authoritarian group did not seem to hold the leader "personally responsible" for the nature of the group atmosphere, the disproportionate strength of his powerfield in this situation was recognized. The investigator believes that in many cases the dominating nature of the ascendant approach to the leader (aggressive demands for attention, etc.) was an attempt to deplete the power of the leader's "directing influence," or to enlarge the own powerfield to bring about a greater equality of powerfield relationship (Figure 17, authoritarian, p. 137). The democratic group members on the other hand indicated no need for such dominant behavior. Their ascendant activity toward their leader was almost exclusively of the friendly or objective type, seeming to indicate, as did their smaller amount of submission, the more satisfactory equality of powerfield relationship which we have already noted (Figure 9, democratic, p. 116). When the content of the dominating conversation of the authoritarian group children toward the leader was investigated, a second interesting fact was found. Most of this behavior consisted of dominating demands for attention and approval (e. g., "Hey, look here. I guess you better say I did this O. K., huh!"). What did this type of conversation mean in terms of the social dynamics of the atmosphere? Previously (Figure 13, authoritarian, p. 134) we noted that the potent subgroup membership for the authoritarian group member seemed at all times to be his relationship with the leader. This of course necessitated the rather constant maintenance by the leader of five simultaneous asymmetrical relationships of domination. The actual result of this five-way demand upon the directing activity of the leader was to reduce each member to an impersonal, "*colorless*" (Figure 18, authoritarian, p. 138) group *unit* to be directed toward leader-induced goals, rather than an *individual* subpart of the group who had a *unique* position

in the group structure and had particular goals and other-member relationships to be respected (Figure 18, democratic, p. 138).

There seemed to be two "work-minded" ways to gain uniqueness in the authoritarian group structure: by doing a poor job and thus being singled out for special "powerfield depletion," or by getting special attention from the leader for work which he could approve. This latter uniqueness seemed to have the meaning (for the members) of an approach to superior social status or a position nearer the leader's central (policy-forming) position in the group (Figure 19, authoritarian, p. 138). This meant two things: greater equality of social powerfield with the leader, and an increase in social powerfield in relation to the strengths of the other members. Stratification seemed to develop along the lines of social power status by leader recognition rather than along the lines of group recognition for individual contribution. Interestingly enough, the members in the democratic situation, where centrality of position and individuality of function was already an "unself-consciously" accepted fact (Figure 19, democratic) tended to move away from complete individuality toward a merging of their particular efforts in a locomotion toward a group goal. This difference will be seen more clearly with the presentation of the next section of results. To the investigator this difference is a fundamental distinction between the competitive social relationship which implies insecurity of social status and the co-operative social relationship which demands security of social status.

Attempts to Maintain the Present Space of Free Movement.— We noted that the democratic group members tended to initiate more of their social actions toward the leader (except submissive actions) while the authoritarian group members tended to approach less and respond more. The relationships indicated by the results seem to justify two possible interpretations: that the authoritarian group members were kept so busy responding that they had less opportunity to make approaches, and that these members hesitated to approach their leader as spontaneously as did the democratic group members. Both interpretations probably have some justification, but the latter seemed to the observers to be the most potent factor in our present consideration of the reactions of the club members to the leader. To approach the leader in the authoritarian group situation meant most often that the leader response would be directing. That this was regarded as necessary quite often is seen

by the number of submissive approaches asking for direction of behavior. But to approach the leader was to leave oneself open to greater domination by his powerfield, and we have noted that this overlapping often meant depletion of power in the authoritarian group (Figure 10, authoritarian, p. 116). The authoritarian group members seemed, therefore, to hesitate to reduce their space of free movement, more than had already occurred, by an approach into a sphere of greater intensity of leader influence (Figure 20, authoritarian, p. 138). Because of the friendly quality of the leader's powerfield and its more nearly equal strength the democratic members were more spontaneous in their social approaches and felt no hesitation in overlapping areas of straight leader influence (Figure 20, democratic, p. 138).

Attempts to Preserve "Personal Privacy".— In Figure 14 (p. 134) we noted in a purely quantitative manner that the authoritarian leader entered the regions of the individual member's personal structure more often than did the democratic leader. Also, the quality of the authoritarian leader's approach tended to be directing in a "personal power depleting" sense more often than did the social approaches of the democratic leader. The group differences in the behavior of "refusal to respond to the leader" seem to indicate one result of this situation. The authoritarian members more frequently shut themselves off from the approaches of the leader (Figure 21, authoritarian, p. 140) by placing the barrier against "personal intrusion" around a more peripheral layer of their personal structure than did the democratic members who were more "accessible" in their social interactions with the leader (Figure 21, democratic). It will be remembered that the democratic leader was also more accessible by this criterion of ignoring responses.

These reactions of the two clubs to the leader as an element in the group atmosphere seem to the investigator to summarize the major outcomes of the analysis in this section of the behavioral relationships of the leader and the child members. In his interpretation, of course, the investigator is continually influenced by the results which have not yet been presented to the reader, but the connectedness and coherence of the three separate sections of quantitative results is enhanced by focusing the interpretation upon the particular kind of social relationships which are under analysis. We are ready now to consider the relationships that developed between the child members in each of the two clubs.

Relations of the Group Members to Each Other

With the two atmospheres evidently differentiated in terms of some of the major characteristics of authoritarianism and democracy, we are ready to ask what this meant in terms of the interpersonal adjustments of the group members to each other and to the ongoing group activity. From the standpoint of the mental hygiene of group life this is our major interest.

A Note on Interpretation of the Data.— It will need to be recalled in reading Table 5 that the social interactions account was tabulated in relation to the group structure record in such a way that we have the categories of in-group and out-group interactions, telling us the frequency of social actions that took place between members of the same activity subgroup and of different activity subgroups in the group structure. It must be kept in mind that "out-group approaches" in this situation were after all between members of the same larger in-group, the mask-making club. There is one important difference between Table 5 (from interactions record) and Table 6 (from stenographic record). To include in a quantitative tabulation all the conversational interactions it was necessary to add another category not taken into account by the interactionist. It has been labeled "general conversation" and has been included in the matter-of-fact category of Table 5. The large group difference in this category tends to change considerably the relation between the total number of social actions in each group, as will be noted in the comparisons of the next paragraph.

Total Social Interactions.— We might have expected to find that, although the frequency of relationship with the leader was considerably greater in the authoritarian group, the interpersonal relations of the children would be of about the same volume in the two groups, or even considerably less in the authoritarian group. With most of the decisions and directing done by the leader in that group, and by discussion in the democratic group, it would seem that fewer interactions were necessary between the members of the autocratic group. Actually this was not the case as Tables 4 and 5 indicate. We see from Table 5 that the authoritarian group members made about eight interactions per unit of time to five in the democratic group (23.4:15.7), but that with the addition of general conversation not related to immediate behavior in the club situation, and thus recorded by the stenographer, but not the interactions observer, the two groups were about equal in volume of ex-

TABLE 5

INTERRELATIONS OF CHILD MEMBERS

Category of Behavior	*Relationship*	*Incidents of Behavior*		*Per Unit of Interaction Possibility*		*Per Cent of Total Child Actions*		*Per Cent of Total Actions of Same Relationship*	
		A*	D**	A	D	A	D	A	D
Total social actions	In group	569	627	35.0	25.0	43	61		
	Out group	757	397	18.60	9.90	57	39		
	Total	1326	1024	23.40	15.70	100	100		
Total initiated social approaches	In group	280	293	17.60	11.60			49	47
	Out group	377	195	9.20	4.80			50	49
	Total	657	488	11.60	7.50	50	47	50	47
Total ascendant actions	In group	351	375	22.10	14.90			62	59
	Out group	485	215	11.90	5.30			64	52
	Total	836	590	14.70	9.10	63	57	63	57
Total initiated ascendant approaches	In group	256	262	16.10	10.40			15	42
	Out group	363	175	8.90	4.10			48	44
	Total	619	437	10.90	6.70	47	43	47	43
Total submissive actions	In group	69	116	4.30	4.70			14	19
	Out group	51	72	1.20	1.80			7	18
	Total	120	188	2.10	2.90	9	19	9	19
Total initiated submissive approaches	In group	22	28	1.40	1.10			3.8	4.5
	Out group	14	17	0.30	0.40			1.8	4.3
	Total	36	45	0.60	0.70	2.7	4.4	2.7	4.4
Total matter of fact actions	In group	9	27	0.57	1.10			1.6	4.3
	Out group	29	18	0.71	0.44			3.8	4.5
	Total	38	45	0.67	0.71	2.9	4.4	2.9	4.4
Refusal to respond to social approach	In group	140	109	8.80	4.30			25	17
	Out group	192	91	4.70	2.30			25	23
	Total	332	200	5.90	3.10	25	19	25	19

*Authoritarian **Democratic

pressed social interrelationships. The group decisions or discussions related to club activity were of course included in the interaction analysis of the groups, as well as all "purely social" interaction which was "in the field."

We see (Table 5) that the democratic members interacted with each other relatively more frequently when in in-group relationships than the authoritarian members for the difference in incidents of behavior is less here than in total social actions, or out-group interactions. "Cross interaction" (between out-group members) is proportionately greater in the authoritarian group (18.6: 9.9). While 57 per cent of the total social interactions were in this out-group category in authoritarian group, only 39 per cent of the democratic members' interactions were of this type. Although considerably more interactions per unit of interaction possibility took place between in-group members than out-group members in both groups, only 43 per cent of the total social actions in the authoritarian group were between members of the same subgroups, as compared to 61 per cent in the democratic situation. Separate study of the initiated social approaches gives the same picture.

Ascendant Relations.— Looking first at Table 5 we find that twice as many ascendant actions per unit of interaction took place between in-group members as between out-group members in the authoritarian group (22.1:11.9), while three times as many (14.9: 5.3) directing actions were in-group relationships as out-group interactions in the democratic group. The proportion of ascendance in the total social actions was also somewhat greater for the autocratic group, and with the addition of general conversation (Table 6) the difference in this respect becomes even larger (58 per cent as compared to 36 per cent). The category of *initiated* ascendance yields these same relationships. Figure 23 gives a more developmental picture of this difference in ascendant behavior as found in the group conversation. It is interesting to note the nearly common starting point of the two groups in proportion of ascendant behavior of the members toward each other. Also of special interest are the two high points for the authoritarian group on the fifth and ninth meetings, the days of concentration upon a group scapegoat. The rather abnormal rises on the sixth and seventh meetings of the democratic groups also relate themselves to the accounts in the group log. This was the period of work frustration when the children were disappointed about the accidental breakage of their

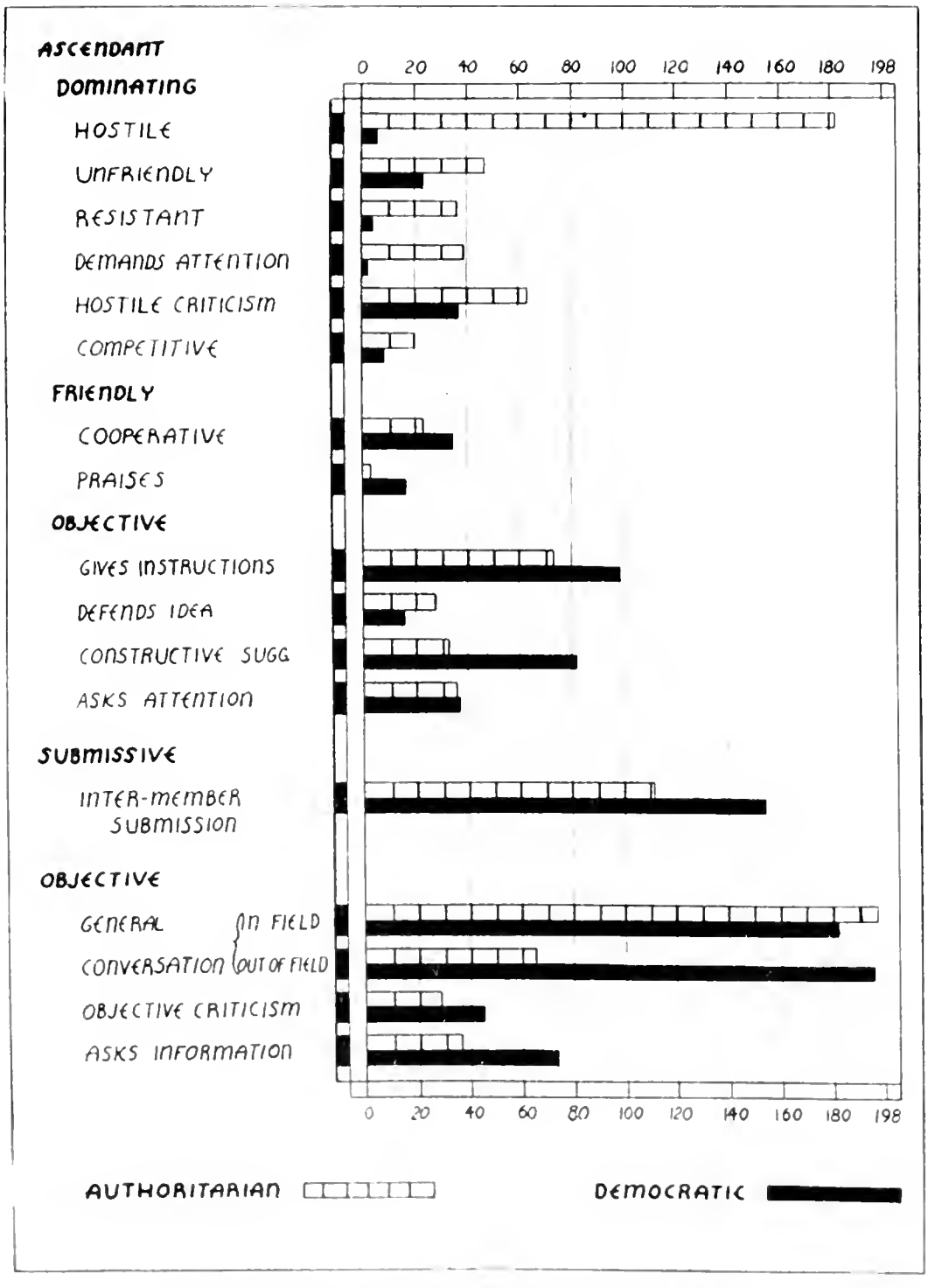


Figure 22: Components of Conversation Behavior

mask mold. The last two meetings of each group represent the time of transfer of one member from each group.

Turning to Table 6 and Figures 24 and 25, the group differences found in the various components of ascendant behavior give a more vivid picture of the quality of group life in these two atmospheres. The major component of authoritarian group ascendance was dominating behavior (67 per cent) while only about one-fifth (22 per

TABLE 6

CONVERSATIONAL INTERRELATIONSHIPS OF CHILD MEMBERS

Category of Behavior	*Incidents of Behavior*		*Per Cent of Total Conversation*		*Per Cent of Ascendance*	
	A*	D**	A	D	A	D
Total conversation	1019	1010				
I. Total ascendant behavior acts	586	361	58	36		
A. Ascendant dominating	392	81	38	8	67	22
1. Hostile	186	6	18	0.6		
2. Unfriendly	49	23	4.8	2.3		
3. Resistant	33	5	3.2	0.5		
4. Aggressive attention demands	39	3	3.8	0.3		
5. Hostile criticism	64	35	6.3	3.5		
6. Aggressive expression of competition	21	9	2.1	0.9		
B. Friendly ascendance	27	50	2.6	5.0	4.6	13.9
1. Expression of co-operation	24	34	2.4	3.4		
2. Praising	3	16	0.2	1.6		
C. Objective ascendance	167	230	16.4	22.7	28.5	63.7
1. Gives instructions	73	99	7.2	9.8		
2. Defends ideas	28	15	2.7	1.5		
3. Constructive suggestion	32	81	3.1	8.0		
4. Asks for attention	34	35	3.3	3.5		
II. Total submissive actions child to child submission	111	155	10.9	15.3		
III. Total objective actions	322	494	31.6	48.9		
A. General conversation total	261	375	25.6	37.1		
1. In club-field	197	181	19.3	17.9		
2. Out club-field	64	194	6.3	19.2		
B. Objective criticism	27	47	2.6	4.7		
C. Asks for information and suggestion	34	72	3.3	7.1		

*Authoritarian

**Democratic

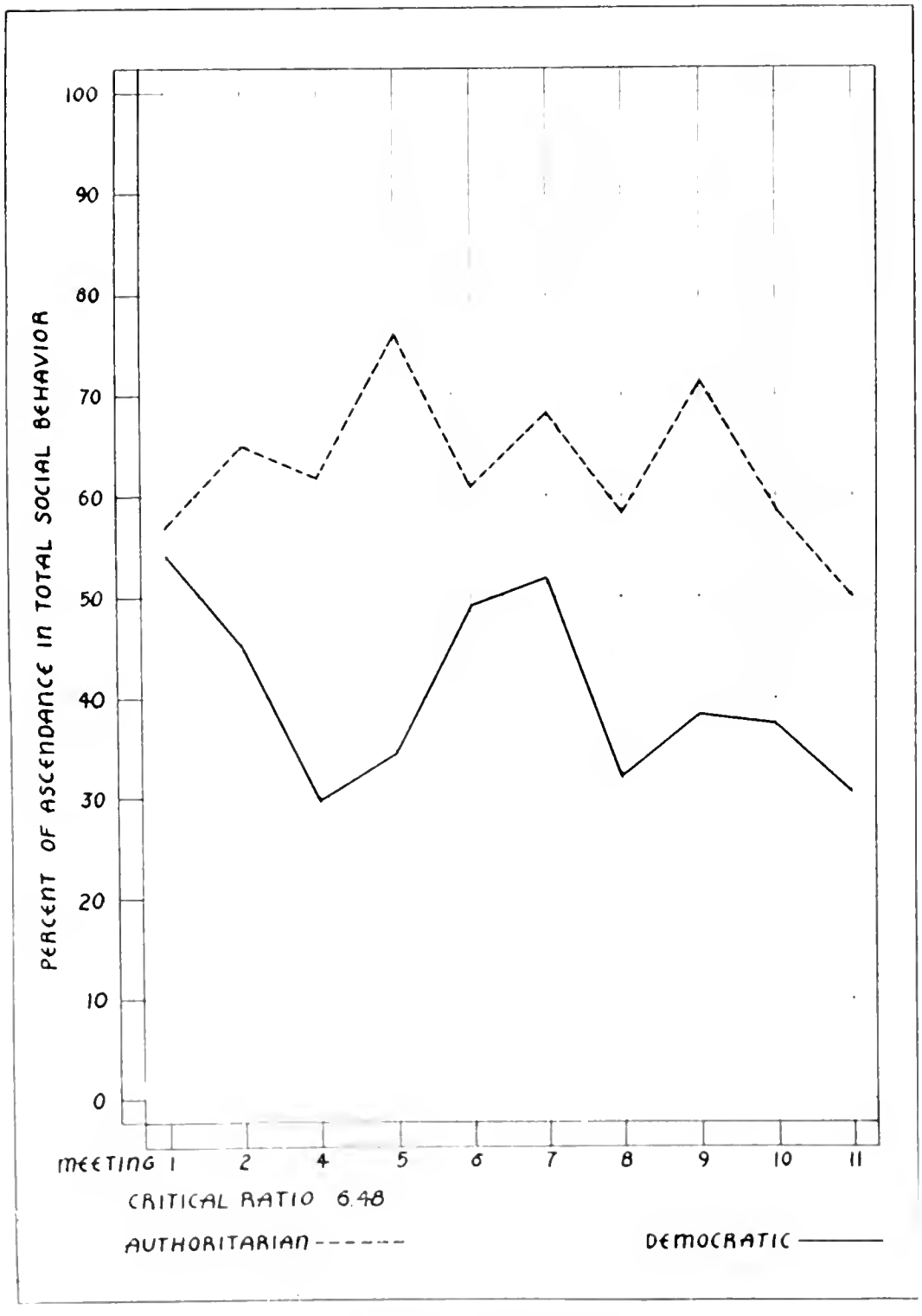


Figure 23. Ascendant Behavior (Child-Child)

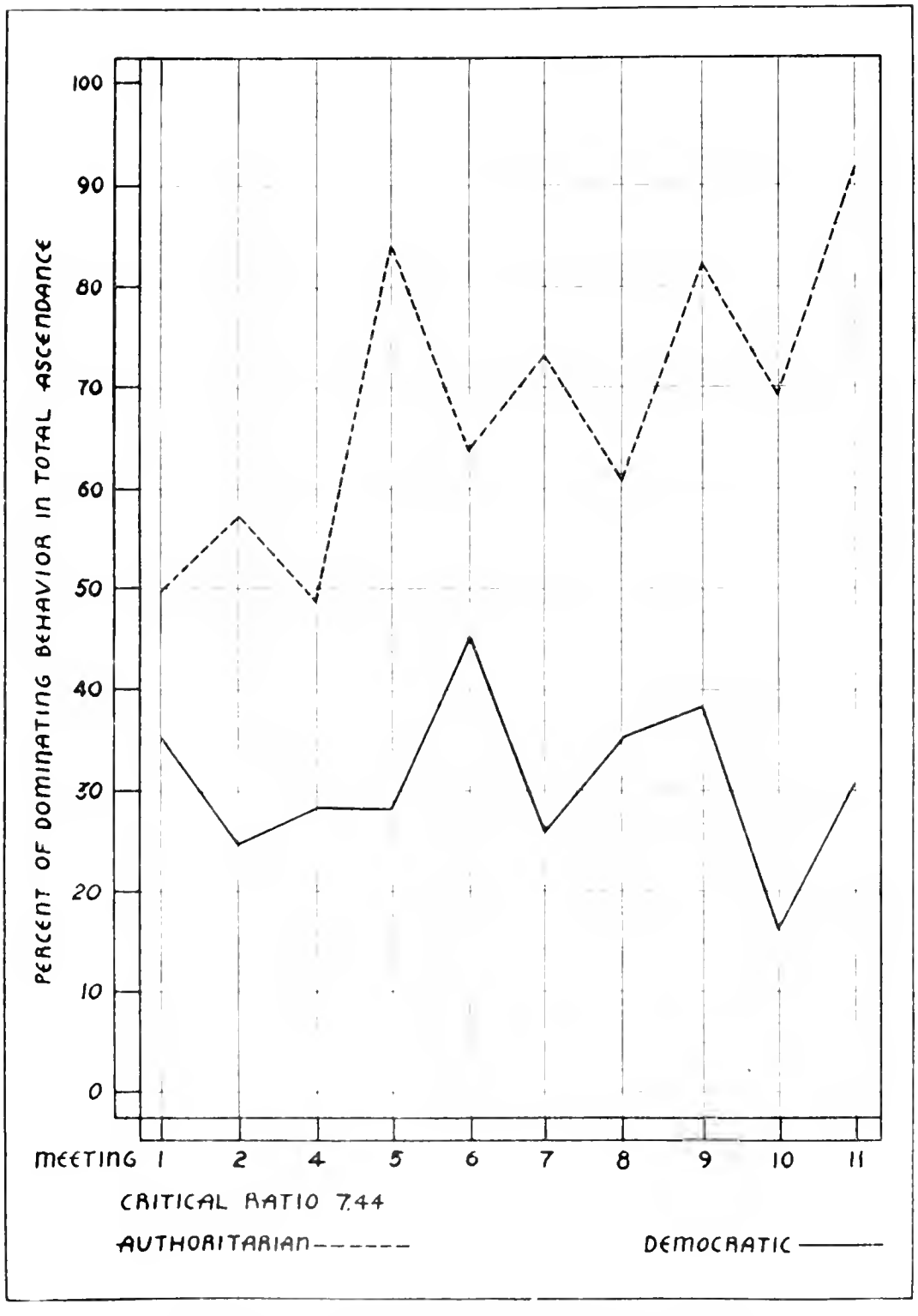


Figure 24. Dominating Ascendance (Child-Child)

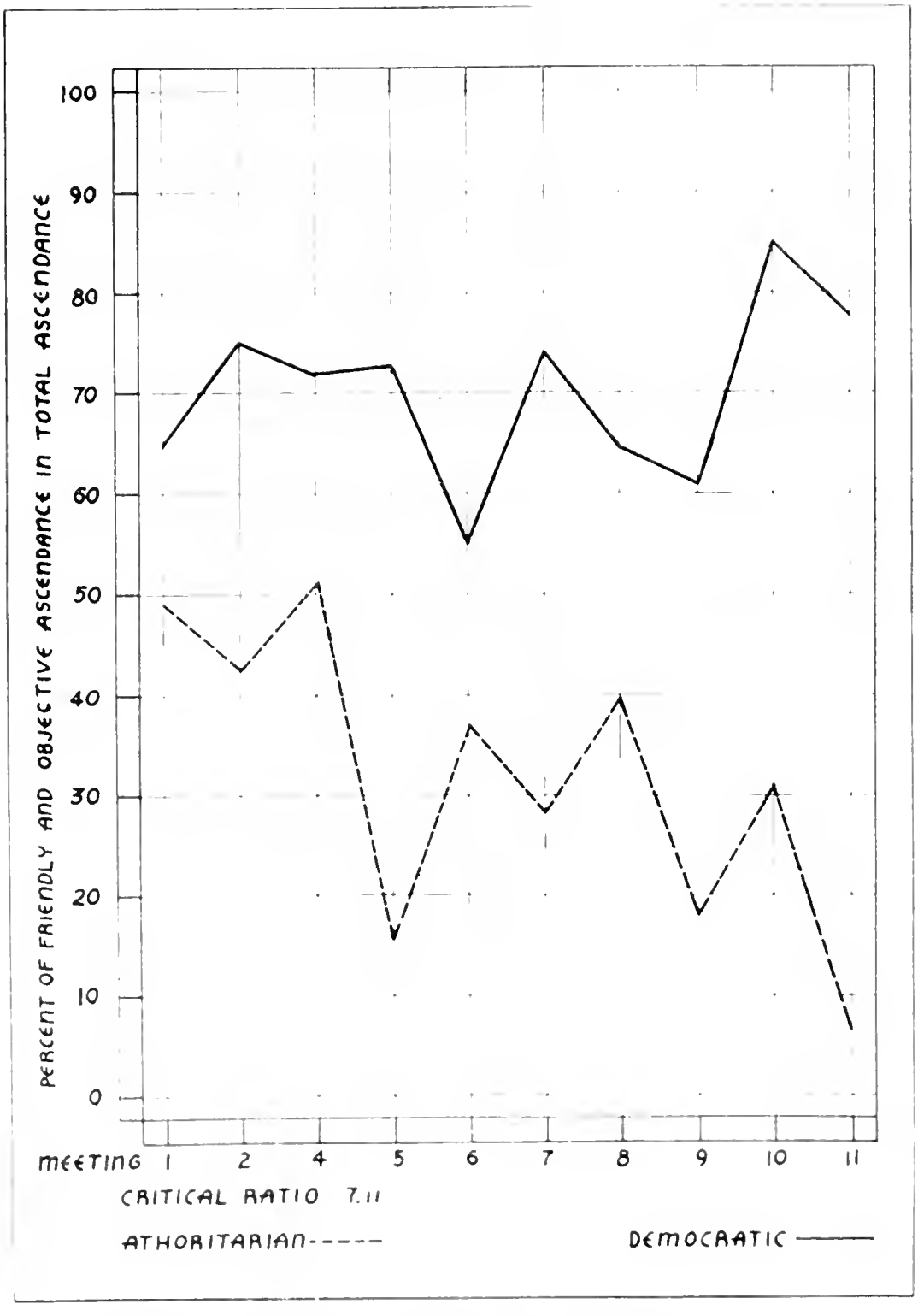


Figure 25. Objective and Friendly Ascendance (Child-Child)

cent) of the directing behavior of the democratic members was of this nature. Within the category of dominating behavior the largest authoritarian group components were overt hostility and hostile criticism, as is shown graphically in Figure 22 (p. 147). Work-minded, objective ascendance was the major item (63.7 per cent) in the directing behavior of the democratic group members, more than twice as large a proportion as in the ascendance of the authoritarian members (28.5 per cent). Friendly ascendance was one-third as large a portion, relatively, of the authoritarian group's ascendant relationships as of the democratic members' interactions (4.6 per cent as compared to 13.9 per cent). Figure 24 (p. 150) indicates the trend of this authoritarian atmosphere to bring about a progressively greater proportion of dominating ascendance of the child members toward each other from the first meeting to the last, and for the democratic group to show about the same or even less of this behavior (exception of sixth meeting already noted) with the progress of group life. Figure 25 (p. 151) shows the inverted relationships of the two groups when the components of friendly and objective ascendance are studied. The items of behavior of these two categories (friendly ascendance, objective ascendance) were put together to give a larger number of incidents per meeting.

Submissive Social Relations.— It has been noted already that the authoritarian members were more submissive toward the source of authority than the democratic members. Were they also more submissive toward each other? The results indicate that the reverse was true. Submissive actions toward one another represent 19 per cent of the social actions of the democratic members as contrasted to 9 per cent of the authoritarian group interrelationships (Table 5). Nearly the same comparison is found in Table 6. About one-fifth of the democratic group's in-group interactions were submissive (19 per cent) as compared to one-eighth (14 per cent) of the authoritarian group's in-group actions. The democratic group stood in even greater contrast when submission in out-group interactions was considered (18 per cent as compared to 7 per cent). It is interesting to note that in both groups the members were submissive to in-group co-workers about three times as often as to out-group members, but the democratic group members tended to be relatively more submissive in out-group relationships than the authoritarian group members. From the analysis of *initiated* submissive approaches we see that the authoritarian group members

were less willing to make a submissive approach to an out-group member than to an in-group member. This distinction seemed to make no difference to the democratic members, as the percentages are nearly the same (4.5 per cent and 4.3 per cent).

Matter-of-Fact Actions.— Looking first at the analysis in Table 5 it is seen that the number of incidents of such fact-minded behavior is small, but that the in-group, out-group categories seem to indicate an interesting trend. Per unit of interaction possibility the democratic members were impersonal in their in-group relationships about twice as often (.57:1.1) as the authoritarian members, but in out-group interactions this ratio is reversed (.71:.44).

The rather different analysis of this work-minded category from the stenographic records (Table 6) seems to show some significant group differences. The items of "general conversation" were those social actions which did not seem to have any bearing upon direction of club behavior of any of the members. These general conversational exchanges were divided into "in-the-club-field" conversation (e. g., What the other club was doing; how many meetings they had had, etc.), and "out-of-the-club-field" conversation (e. g., about a school assembly program; who got a hundred in arithmetic, etc.). The amount of in-the-field conversation was about the same for the two groups, taking up 19.3 per cent of the social exchanges of the authoritarian group to 17.9 per cent of those of the democratic group. The "out-of-the-field" category shows a large difference, three to one, in favor of more activity in the democratic group. This then is the essential point of difference between the amounts of total activity in Table 5 and Table 6, seeming to indicate considerably more common regions in the life spaces of the democratic members. The democratic members also made objective criticisms of their own or other members' work, and asked fellow members for suggestions and information about twice as often as the authoritarian group members. Figure 26 indicates the increase in proportion of objective behavior in democratic group, and the tendency to become less objective in authoritarian group relationships.

Refusal to Respond to Social Approaches.— The authoritarian group members ignored the approaches of fellow members twice as often (5.9:3.1) per unit of interaction possibility as the democratic members. In both groups there was a tendency to ignore social approaches from out-group members about twice as often as from in-group companions. In terms of per cent of in-group and out-

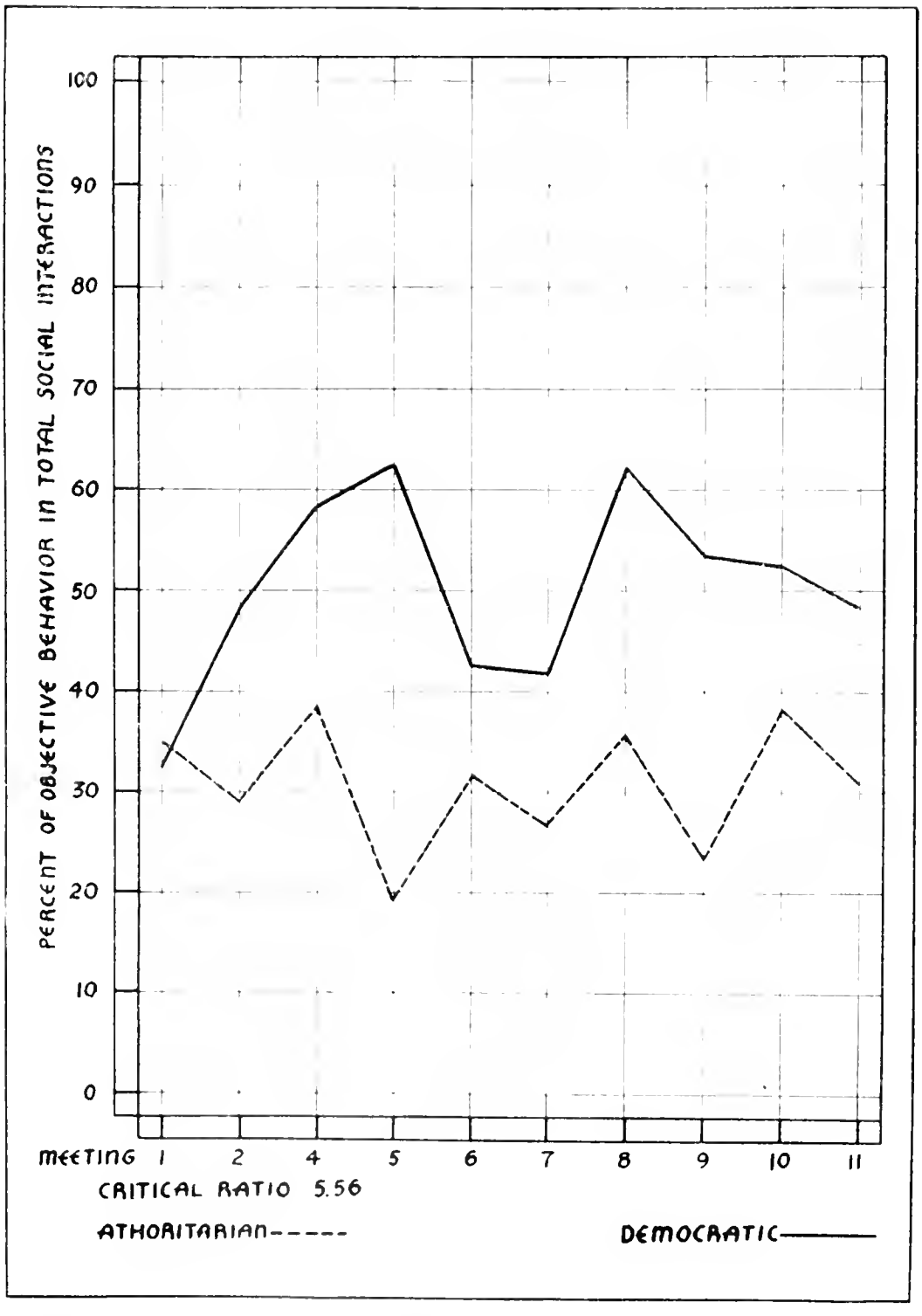


Figure 26. Objective or Fact-Minded Behavior (Child-Child)

group activity the democratic members responded relatively more often to in-group than to out-group companions. This difference in relationship made no difference to the authoritarian group members.

Interaction Chain Analysis.— The reader will remember that the observer of social interactions divided his running account as he went along into larger units or chains of social interactions. The tabulation below indicates the same types of relationships as the more minute analysis has already summarized:

	Authoritarian		*Democratic*	
	Occur-rences	*Total Chains, Per Cent*	*Occur-rences*	*Total Chains, Per Cent*
Total number of chains	448		284	
How chain began:				
Ascendantly	404	20	239	84
Submissively	39	9	38	13
Matter-of-factly	5	1	7	3
How chain ended:				
Ascendantly	116	26	53	19
Submissively	127	29	102	37
Matter-of-factly	62	14	56	20
Refusal to respond	141	31	68	24
Average persons in a chain	3.1		3.3	
Average number of actions per chain	4.2		6.2	

We note, in line with the other results, that interaction chains begin ascendantly somewhat more often in the authoritarian group. Rather naturally there is a clear tendency for most interaction chains to begin with an ascendant approach. The chains began submissively or matter-of-factly more often in the democratic group. Also we see that a focus of group or subgroup attention is likely to be settled with an ascendant response or by an ignoring action more often in the authoritarian group, and more often by submissive or matter-of-fact responses in the democratic group. Although the number of members involved in each interaction chain was about the same for the two groups, the number of interactions per chain seemed to differ significantly, with longer chains in the democratic group (6.2 interactions as compared to 4.2).

Collective Versus Ego-centered Conversation and Activity.— The summary group vote given at the end of the preceding section

seemed to indicate rather clearly that there had been a much more "group-minded" approach to the activity of mask-making in the democratic group. While each of the members of the authoritarian group had identified himself with a particular group product by the last meeting, the democratic group had a large proportion of votes favoring a collective disposal of one or more of the masks (e. g., to teacher, to leader) and the others were to go to "those that had the ideas for them" rather than to "me." It will be remembered that on the very first meeting with the children the same emphasis was put upon the fact that the masks would be group property to be disposed of by group consent. The actions following the release of leader authority in the authoritarian group after this last meeting vote also indicated a tendency toward destruction of the group productions by the members.

The investigator thought that perhaps another index as to the personal ego versus group goal involvement could be found in the relative frequency of the personal expressions, *I*, *me*, and *mine* and the collectives *we*, *us*, and *ours*. The tabulation indicates the group difference resulting from this survey of the stenographic records.

	Autocratic Group		*Democratic Group*	
	Occur-rences	*Per Cent of Total*	*Occur-rences*	*Per Cent of Total*
Total expressions	518		487	
"I-centered"	426	82	313	64
"We-centered"	92	18	174	36

While only 18 per cent of the authoritarian members' expressions indicated a feeling of collective unity, over a third, or 36 per cent, of the democratic members' expressions were "we-centered."

Group Structure Factors.— From many informal observations of a variety of clubs in action it had seemed to the present investigator that the size, stability, and number of subgroupings within the larger group structure usually had considerable significance in indicating the unity and constellation of the interpersonal relationships existing within the group. Remembering that the actual activity demands upon subgroup structure were equated for the two groups, a survey of Tables 7 and 8 indicates several group differences.

First, 30 per cent of the group structures in the authoritarian atmosphere were initiated by the leader as compared to complete spontaneity of subgroupings in the democratic group. We see that

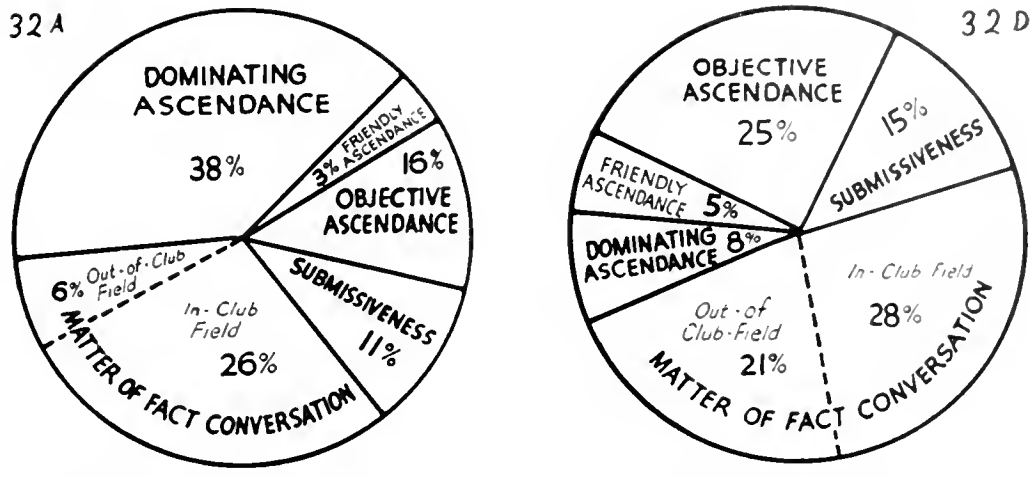


Figure 32. Conversational Locomotions Into the Various Regions of "Interaction Meaning"

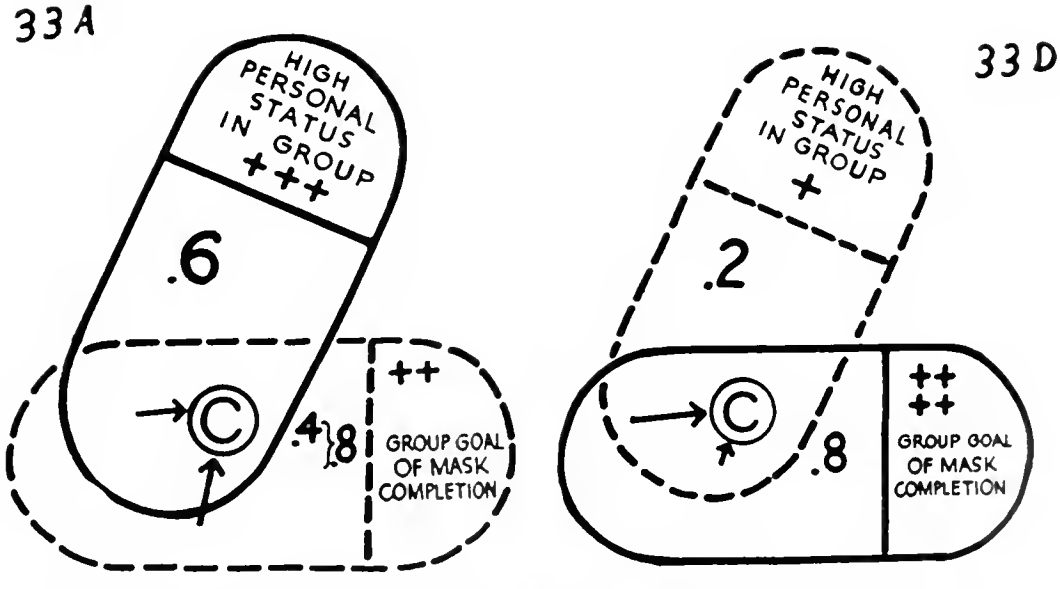


Figure 33. The Overlapping of Personal Needs and Group Situation

In the authoritarian club social frustrations seemed to result in a strong force (Poteney = .6) toward a personal goal of more satisfactory social status. This goal was in conflict with the less potent (.4) own goal (represented in black) of co-operating in the mask project. Leader-induced (in red) social forces, however, made the work goal most potent during most of the club period.

In the democratic atmosphere where spontaneous recognition of "individuality" was a part of the situation, the status goal was not very potent (.2) and the group goal interest predominantly determined behavior (.8).

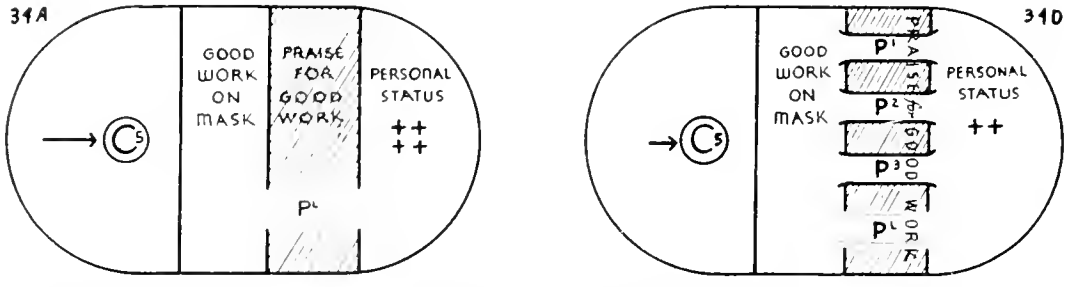


Figure 34. Work-Mindedness as a Path to Social Status

In the authoritarian situation leader praise for good work (P^L) was seen as a possible path to personal status, but one which was often not easily accessible.

In the democratic club spontaneous work praise of fellow club members (P^1, P^2, P^3) as well as the leader (P^L) made good work a distinguished path to social status.

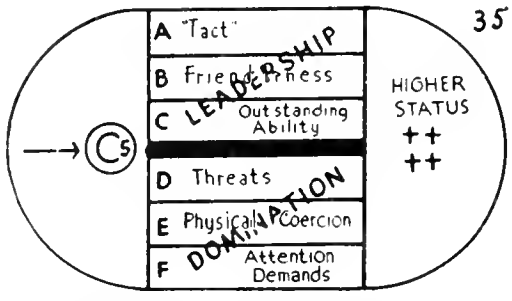


Figure 35. Paths to Higher Social Status in the Group

As subparts of the two major paths to status (leadership, domination) several patterns of means-behavior were distinguished. We have identified three patterns of leadership (A, B, C) and three patterns of domination (D, E, F) which seemed to exist in our experimental social atmospheres.

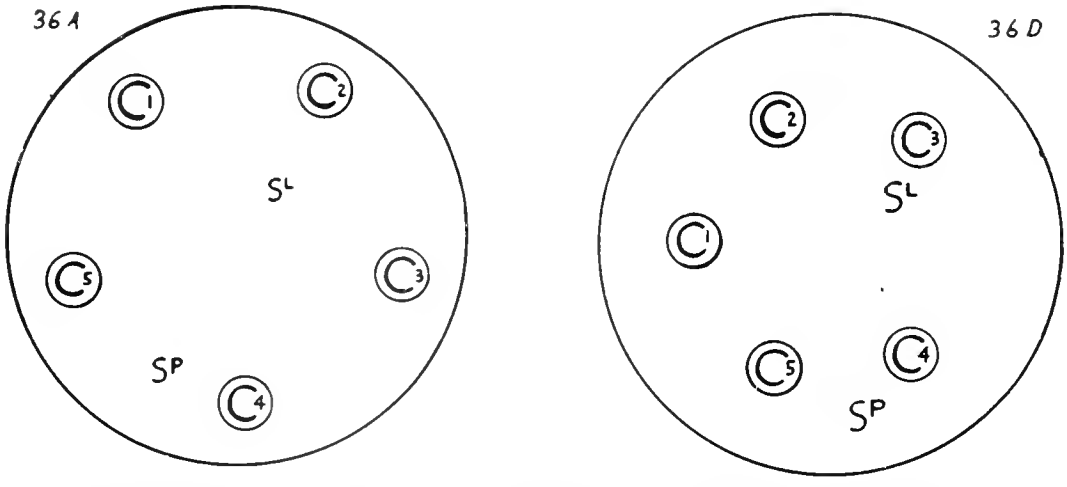


Figure 36. Leader Influence on Accessibility of Leadership Status

In the authoritarian situation the leader (L) maintained exclusive "possession" of the central position of group leadership (S^L), putting up a social barrier (B^{so}) which kept all other members in positions of peripheral status (S^p).

In the democratic atmosphere, on the contrary, leadership status (S^L) was accessible to all members at one time or another, the leader (L) maintaining no exclusive hold on regions of group centrality.

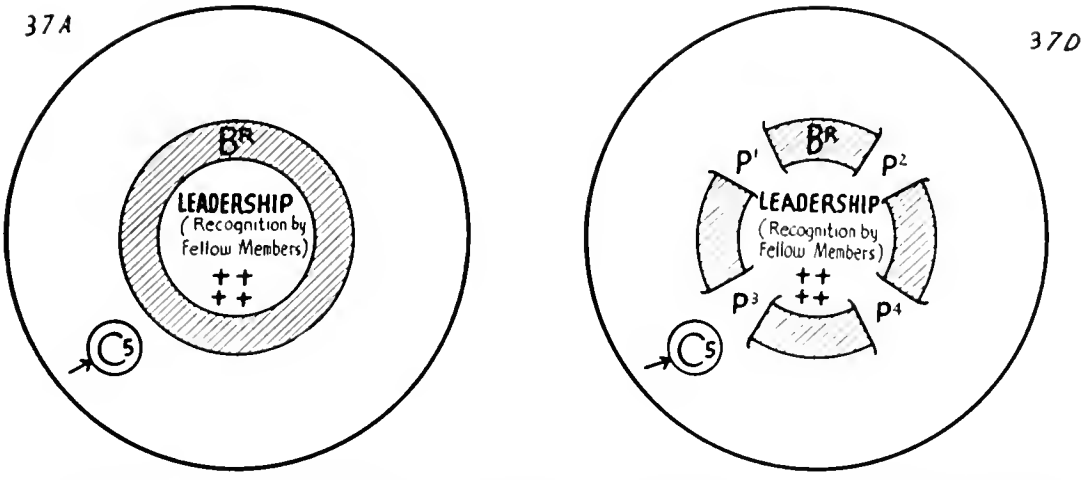


Figure 37. Fellow Member Influence on Accessibility of Leadership Status

In the authoritarian situation the mutual competition of all child members for more secure group status meant that no child was willing to spontaneously recognize a fellow member as superior in any way, and thus for each child a social barrier of nonrecognition (B^R) barred each member from a position of leadership (as contrasted to domination).

In the democratic club spontaneous praise of the members by one another (P^1, P^2, P^3, P^4) made leadership an accessible region for any particular member (C^5).

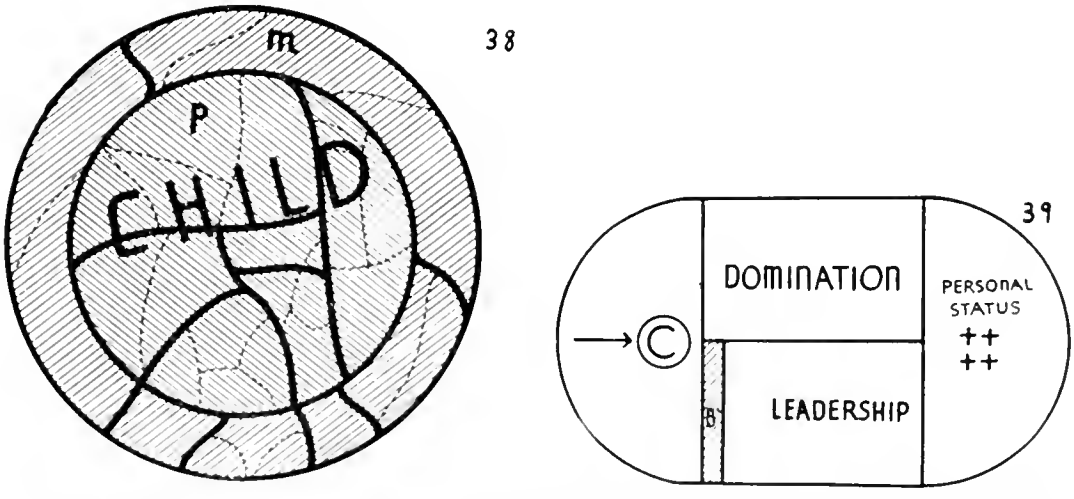


Figure 38. Dedifferentiation of the Personal Structure Under High Tension

This representation of the child (motor perceptual stratum; p = inner personal systems) indicates that in a condition of high general tension (indicated by crosshatching) the degree of differentiation (number of systems with a certain degree of functional independence) of the person has decreased, resulting in a more primitive or less differentiated psychological structure (broken lines represent former systems which no longer possess functional independence).

Figure 39. Domination as the Distinguished Path to Social Status in the Authoritarian Situation

With the path of leadership barred both by non recognition of fellow members (B^M), and by the particular relationship with the adult leader (B^L), the clearest path to social status for the members in the authoritarian club was by means of dominating social techniques.

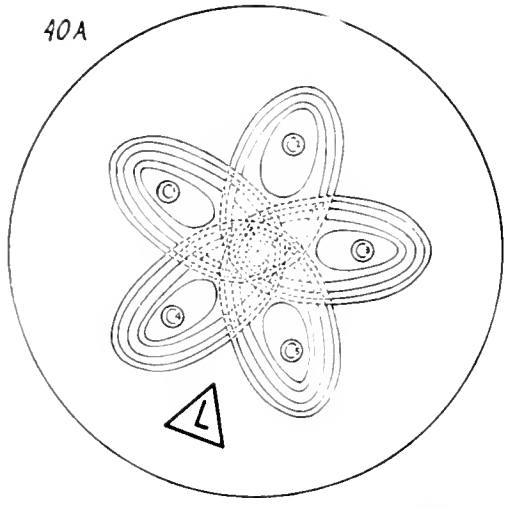


Figure 40. The Social Situation of Mutually Hostile and Equally Strong Overlapping Powerfields

In the authoritarian atmosphere a situation of mutual competition of each member (C) with each other member for domineering status resulted in a mutual weakening of all members, the members having all been reduced to approximately equal social power by their relationships with the leader (L).

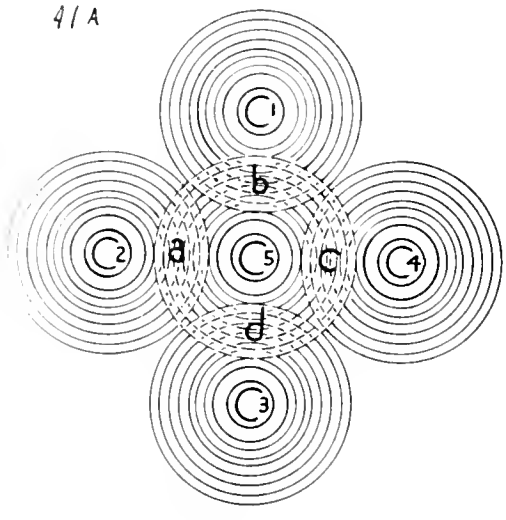


Figure 41. The Scapegoat Situation

Twice the interpersonal relationships shifted so that four members (C^1, C^2, C^3, C^4) were concentrating their attack upon the fifth member (C^5) who was weakened fourfold by this overlapping of social powerfields (a, b, c, d) and became clearly inferior to his fellow members.

TABLE 7

GROUP STRUCTURE ANALYSIS

Analysis		*Group Structures*							
		5	4–1	3–2	3–1–1	2–2–1	2–1–1–1	1–1–1–1–1	Total
		Occurrence							
A*	Spontaneous	4	6	5	9	6	16	17	63
	Initiated	1	3	7	2	6	8	0	27
D**	Spontaneous	12	29	3	19	6	7	12	88
	Initiated	0	0	0	0	0	0	0	0
		Total Time of each Structure (in Minutes)							
A	Spontaneous	7.5	19.5	7.5	21	10	38	43	147
	Initiated	1	6.5	71	21	10.5	28.5		139
D	Spontaneous	29	122	15	44	10	20.5	28.5	269
	Initiated								
		Average Time of each Structure (in Minutes)							
A	Spontaneous	1.68	3.24	1.5	2.33	1.7	2.4	2.5	2.2
	Initiated	1.0	2.17	9.14	10.5	1.7	3.6		4.7
D	Spontaneous	2.42	4.21	5.0	2.32	1.7	2.9	2.4	3.0
	Initiated								

*Authoritarian

**Democratic

the two structures of highest group unity (5 and 4-1) occurred fourteen times in the authoritarian group and forty-one times in the democratic group. The two lowest degrees of unity (2-1-1-1, 1-1-1-1-1) appeared forty-one times in the authoritarian atmosphere and nineteen times in the democratic group life. The actual number of structures which occurred in each group was nearly equal, ninety in the authoritarian group to eighty-eight in the democratic group. Taking as the next index the number of minutes of the group life during which each subgroup structure existed we find the same differences, 34.5 minutes of the two most highly united patterns in the authoritarian group to 151 minutes in the democratic group, and 109.5 minutes of the two most divided group patterns in autocracy to 49 minutes in democracy. We have already noted the effect upon the duration of initiated structures of the authoritarian leader. Initiated structures had an average life of 4.7 minutes to 2.2 for the spontaneous authoritarian group structures. The average democratic group structure had a duration of 3 minutes. The reader might question whether this evident lack of unity of the authoritarian group might not have been due to the initiation by the leader of structures of divided pattern. The analysis of the direction of the changes in group structure gives us the answer to this question. Under each structure is a tabulation of the direction of the changes which resulted in the formation of that particular structure. The totals indicate that the leader changed the authoritarian group toward *higher unity* nineteen times out of twenty-seven *initiated* shifts and that it *spontaneously* changed toward greater *disintegration* of structure forty times out of sixty-three. There is reason to believe, then, that the influence of the autocratic leader made the two groups more similar in structure than they might otherwise have been. The democratic group had about the same number of shifts in pattern in each direction, forty-three up and forty-five down. The greatest possible change in group structure, from complete disintegration to complete unity, was six steps in our groups of five members. If one scans through the profile of structure changes for a meeting, as it may be seen in the original running account, one finds continually in the authoritarian group records the picture of a leader-initiated unity of structure slowly breaking down as the leader's influence is withdrawn, to be built up again by his renewed action, but unable to maintain spontaneously a stable structure of a highly united pattern. The last tabulation in Table 8 indicates that the average dis-

TABLE 8

GROUP STRUCTURE ANALYSIS

Analysis		*Group Structures*															
		5		4–1		3–2		3–1–1		2–2–1		2–1–1–1		1–1–1–1–1		Total	
		Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down
		Direction of Structure Change***															
A*	Spontaneous	4	0	6	0	4	1	5	4	1	5	3	13	0	17	23	40
	Initiated	1	0	2	1	4	3	2	0	4	2	6	2	0	0	19	8
D**	Spontaneous	12	0	21	8	1	2	5	14	2	4	2	5	0	12	43	45
	Initiated																
		Average Distance of Structure Change****															
A	Spontaneous	3.75	0	3.2	0	2.0	1.0	1.8	1.5	1.0	1.8	1.0	2.1	0	1.8	2.1	1.6
	Initiated	6.0	0	2.0	1.0	2.75	1.7	3.0	0	1.25	2.5	1.0	3.0	0	0	2.7	2.1
D	Spontaneous	2.7	0	2.7	1.0	1.0	1.0	2.6	2.0	1.5	2.0	1.0	1.8	0	3.4	1.9	1.9
	Initiated																

*Authoritarian

**Democratic

***Read as follows: 4 group structures changed to a 5-together pattern from a lower pattern, none came down to a 5 pattern (an impossibility); 4 shifts were made up to a 3-2 pattern; and one down to a 3-2 pattern from a more united pattern, etc.

****Read as follows: structures shifting up to a united pattern of 5 averaged a shift of 3.75 steps in structure, or from a point "between" 3 1 1 and 2-2-1, structures shifting down to a pattern of 3-2 averaged a shift of one step, or came from 4-1, etc.

tance of structure change was greater (thus changing the personal working relationships of more members) for the leader-initiated groups than for the spontaneous structures in the authoritarian group, and that the building up tended to be more abrupt than the breaking down. The size of the change was the same in both directions in the democratic group. We note also that some patterns of structure seemed to be more unstable and less frequent than others. This suggests the interesting possibility of certain "natural patterns" for different sized social groups.

The Scapegoat Situation.— An interesting quantitative index of the two scapegoat situations (described in the group log) is furnished by an analysis of the curves of dominating behavior *initiated by* and *received by* each member of the authoritarian group. Figure 27 gives this comparison for both groups. The reader will find these individual curves interesting in several ways, but only three factors are of major interest here. In comparing the dominating behavior of each child with the domination directed against him, a dramatic polarization of domination (largely of the hostility category) against one member by the others becomes rather clear on two occasions in the authoritarian situation. The impotency of the scapegoat's defense is indicated by the relatively small number of dominating approaches he makes while being attacked. A minute by minute analysis of the fifth and ninth meetings would indicate the progressive loss of social power of the scapegoat as the attack developed. We note from the curves of Figure 27 the submissive position Tom had to take before he left the club (sixth meeting). The second factor to be noted is the evident drop in dominating behavior on the part of the members during the meeting after the scapegoat attack. This effect was even more noticeable in the actual atmospheres of the club meetings than it is in the curves of Figure 27. There seemed to be an appreciable increase in work-mindedness and amicability of the members toward each other immediately, but only for a short period. The attempt of the scapegoat to go

Figure 27. Comparison of Dominating Behavior "Given" and "Received" by Each Club Member

In the authoritarian group the concentration of hostility toward Tom (fifth meeting) and Joe (ninth meeting) is clearly seen in the curves of "dominating ascendance received." A comparison of the "domination output" and "domination received" by each member is interesting.

In the democratic situation the most striking thing noted is the uniformly low manifestation of domination by all members, and the lack of appearance of anything resembling a scapegoat situation. It will be recalled that the sixth meeting was the one in which work frustration occurred. Figure on next page.

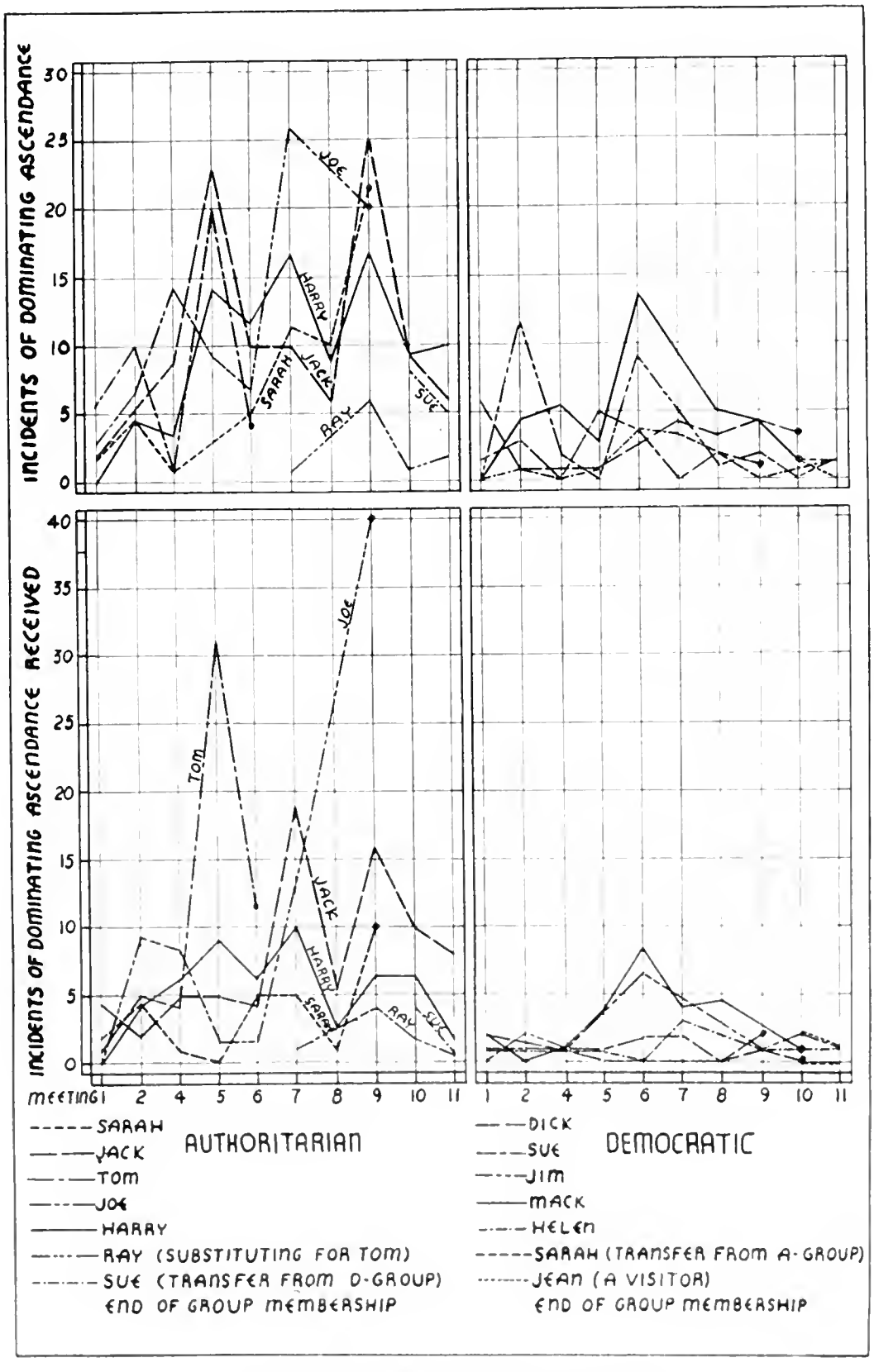


Figure 27. (See caption on p. 164)

into a region of work interest and closer relationship with the leader was also noticeable in both cases. (See Group Log.) To make comparison possible comparable curves for the democratic group (Figure 27, democratic) have been included to show the same relationships of dominating behavior in the democratic group. The sixth meeting seems to offer the only behavior peaks which could be called at all abnormal, and it must be noted that the two individuals involved, Jim and Mack, "gave" as much as they "received" of dominating behavior, which was clearly not the case in the scapegoat situation. This period (sixth meeting) of work frustration may be reviewed in the group log. In a more general way the careful inspection of the curves seems to uphold the finding of Anderson (1) that dominating behavior "begets" dominating behavior on the part of companions. The nature of these two outbreaks surely seems to warrant further experimental research into the problem of the polarization of interpersonal hostility within a group. The sociological problem of the "minority group" seems to be of identical nature. Why a group in an "atmosphere of high pressure" will suddenly turn upon some section of itself as a "release mechanism" is a problem of paramount importance for socio-psychological research.

The Changes of Group Membership.— The qualitative observations of the changes in group membership of Sarah and Sue may be reviewed briefly.

Sarah was changed from the authoritarian to the democratic group and received a rather friendly reception, beginning to help spontaneously on the mask by the end of ten minutes. She was outside of most of the group conversation, making few social interactions. She seemed bewildered by the spontaneous participation of the regular members in the clean-up activity. The second meeting found her much more of an active group member but rather at a loss to understand all the time spent in discussion and decision by the democratic group members. She enjoyed the club, however, and continued to come when the regular meetings were over — voting for more meetings, also voting "each take their own" (mask) in contrast to the regular democratic members' more group-centered suggestions for the disposal of the masks.

Sue refused to identify herself with her new group (authoritarian group) during the first meeting, calling them "they" in her conversation and boasting about the superiority of her group's

products (a true superiority). She clearly indicated a cognitive differentiation of the two atmospheres with the remark, "You're different in this group, aren't you?" (How come?) "Oh, the whole thing. We're a little more independent than you are." (What do you mean?) "We had things more our way." Sue tended to respond before the other members to the directions of the leader during this first meeting but resented the lack of cooperation of the regular members during clean-up. During the second meeting she set out to work on a project of her own and was quite dominating, especially toward Ray. She did not join in the outburst of "release" behavior when the results of the voting were announced. She showed no desire to continue the club meetings.

Figure 28 indicates rather clearly the effect of the changed group membership upon the proportion of ascendant and objective behavior in their total social behavior. The effect of the new atmosphere with its different "style" of behavioral relationships is quite evident in both cases. The changes in components of ascendance represented in Figure 29 suggests that these differences are an even more delicate indicator of the changes in atmosphere response of the new members. These are of course only two cases, representing a small number of incidents of behavior in each case, but the evidence is rather clear-cut and all in the same direction.

Changes in Popularity.— We have the comparison between the original popularity of the group members in their schoolroom and the popularity of the same members rated by their fellow members at the end of the club meetings. A rather surprising consisteney from one rating to the other was found. Ray's final position seems to be the point of greatest interest in these rankings as noted below:

	Authoritarian Group		*Democratic Group*	
Popularity Ranking	*Before Club (By Whole Room)*	*After Club (By Members)*	*Before Club (By Whole Room)*	*After Club (By Members)*
Highest	Jack	Jack	Dick	Dick
Second	Joe	Ray*	Helen	Mack
Third	Harry	Harry	Mack	Helen
Fourth	Sarah	Sarah	Sue	Sue
Fifth	Tom	Joe	Jim	Jim
Sixth		Tom		

*Absent during schoolroom ratings

Quiet, submissive Ray, by consistently being chosen second or third, unexpectedly achieved a high position in the club rankings. Joe, as

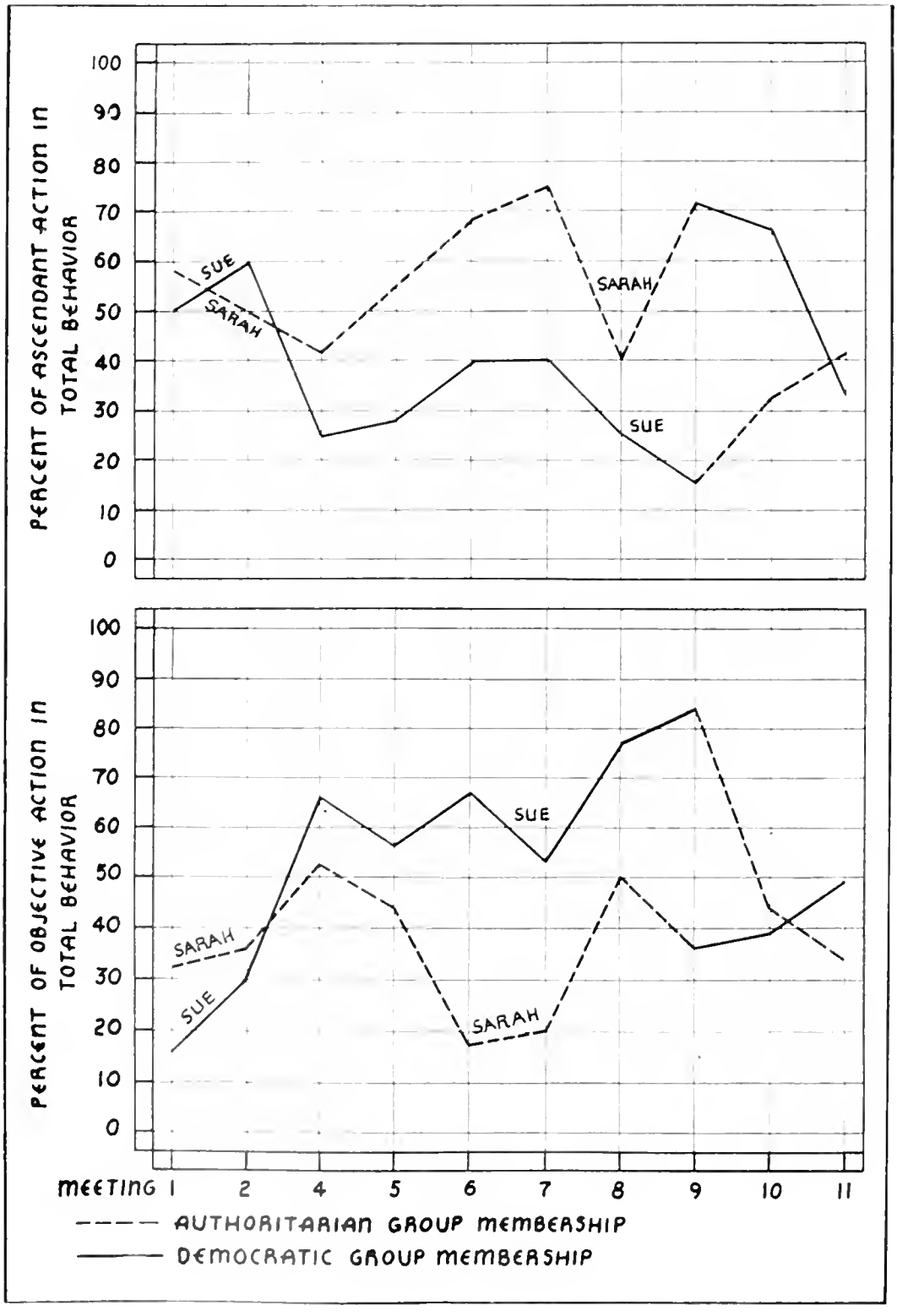


Figure 28. Comparison of Transferred Club Members

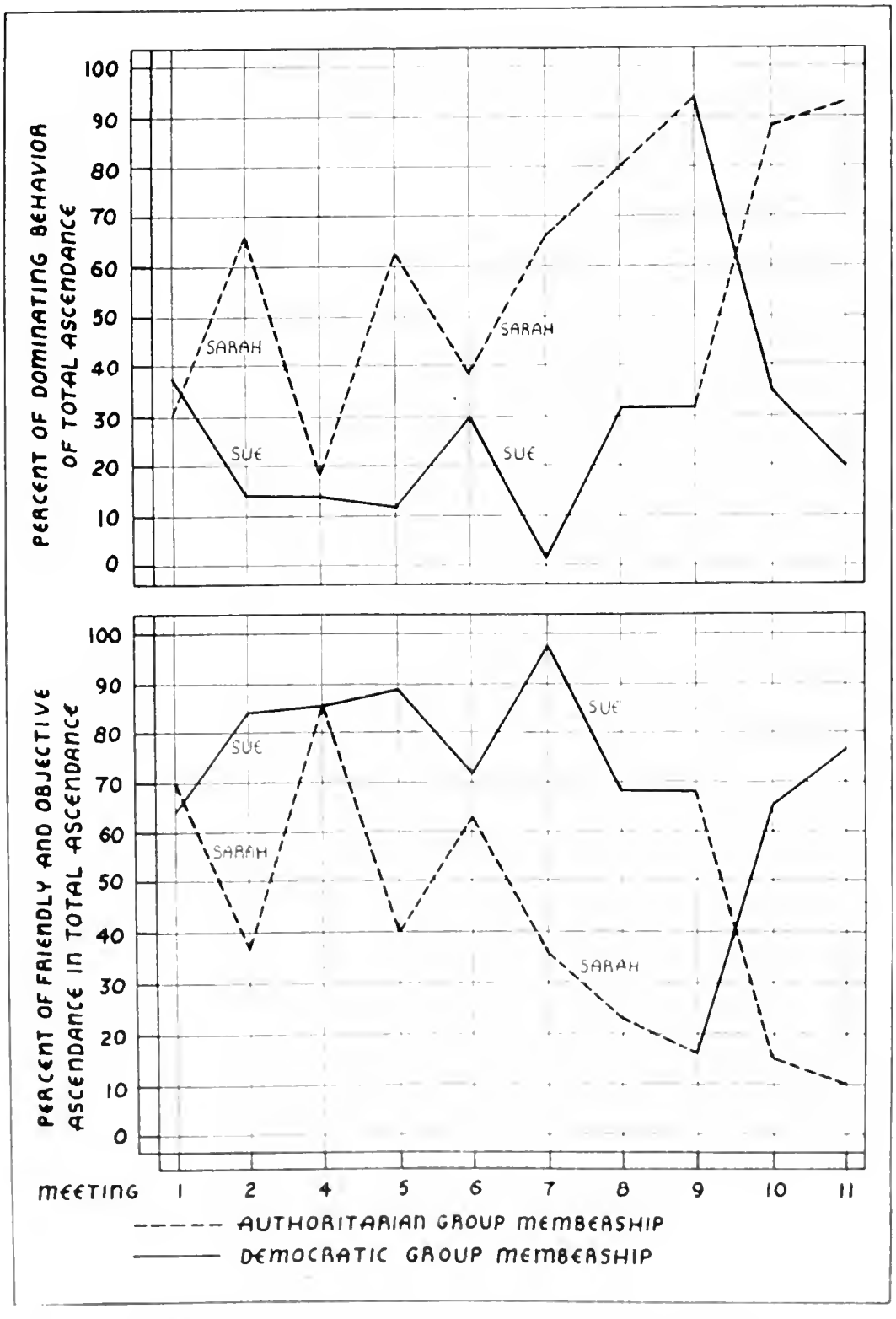


Figure 29. Comparison of Transferred Club Members

might have been expected (he was the second scapegoat), dropped to a low position and Tom continued to hold the lowest ranking. We may say that Jack, Harry, Sarah, and Tom held the same ranks in this club rating as in the choices of all their schoolmates, and that in the democratic group only one very minor shift took place, a one rank reversal for Mack and Helen.

Individual Differences.— The investigator is fully cognizant of the fact that to be really complete he ought to conclude this presentation of his results with a rather careful analysis of the differential responses of the different group members to the same experimental atmosphere. Did differences in philosophy and practice of discipline in the home situation show up in club adjustment? Did rather generalized differences in attitudes toward adult prestige and social distance play a part? After surveying the data which he had gathered on each club member by a study of the school records, observations in the school situation, and interviews with the children, the investigator decided that it would be entirely too presumptuous to attempt to establish such relationships in this preliminary study. The facts which had been gathered were entirely too scanty and tended to show a sameness in major factors of the backgrounds, a sameness which had prompted the experimenter to choose these particular children as club members. The study now in progress is attempting, in a much more thorough way, to study the factors of overlapping group memberships which may make for differences of behavior in the same experimental club situation. By periodic interviews with the club members by a friendly person not active in the club situation, it is proving possible to get some frank comparisons between the atmospheres of the home, school, and club. These comparisons are made in terms of reactions to discipline, and conceptions of the particular restrictions that exist to space of free movement in each situation. The parents have proved to be very co-operative in discussing with the investigators their evaluation of the methods and relationships that create the home atmosphere. Rating scales made out by parents and teachers seem to indicate some interesting differences. With data of this scope it is hoped that some meaningful individual psychological interpretation may be made which are clearly beyond the scope of the present study. Figures 30 and 31 present some individual profile comparisons of the two groups which indicate to this investigator the lack of any important amount of "overlapping" of behavior of the members in the different atmospheres. The great

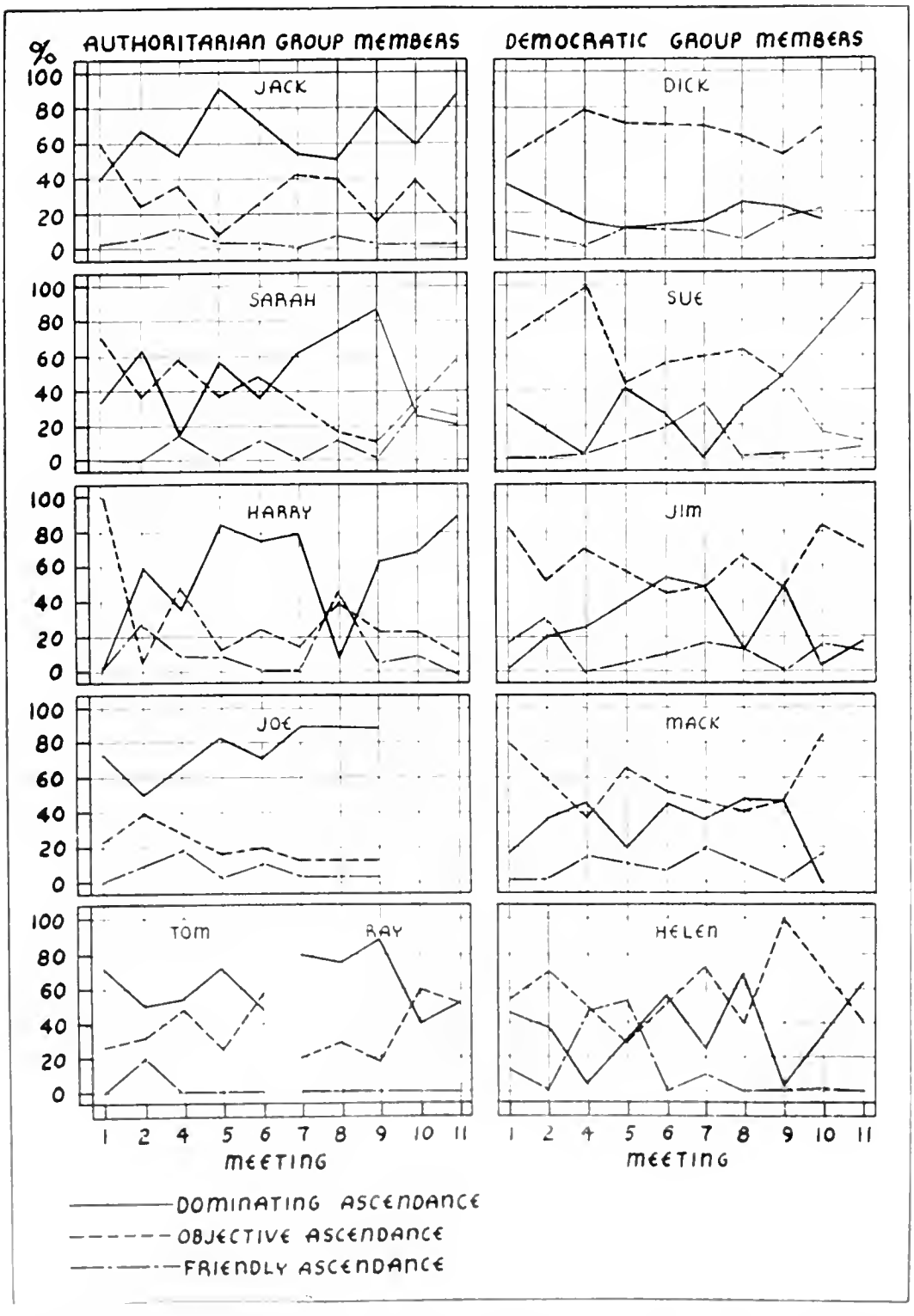


Figure 30. Individual Comparisons of Ascendant, Submissive, and Objective Behavior

variability of many of these individual curves is, of course, partially due to the small number of incidents of behavior to be charted when the social activity of one member for a single meeting is divided into the various categories of interaction analysis. But *the same member was* different every time he came to a club meeting. The changes in the constellation of social forces in the club situation from time to time merely made "inconsistent" behavior the "consistent" way of reacting. The two tabulations below indicate, however, what is meant by the conclusion that there is an essential lack of "overlappingness" in behavior between the two groups.

	Second to Eleventh Meetings: Curve of Objective Ascendance		*First Meeting*	
	Below Domination	*Above Domination*	*Objective Below*	*Objective Above*
	Autocratic Group			
Sarah	5	2		1
Jack	9	0		1
Joe	6	0	1	
Tom	3	1	1	
Ray	3	1		
Harry	7	2		1
Total	33	6	2	3
	Democratic Group			
Dick	0	6		1
Sue	0	7		1
Jim	1	8		1
Mack	2	6		1
Helen	2	6		1
Total	5	33		5

	Second to Eleventh Meetings: Curve of Matter-of-Fact Behavior		*First Meeting*	
	Below Ascendance	*Above Ascendance*	*Matter-of-Fact Below*	*Matter-of-Fact Above*
	Autocratic Group			
Sarah	5	2	1	
Jack	9	0	1	
Joe	6	0	1	
Tom	3	1	1	
Ray	2	2		
Harry	8	1	1	
Total	33	6	5	0

	Democratic Group			
Dick	3	3	1	
Sue	1	6	1	
Jim	4	5	1	
Mack	4	4	1	
Helen	1	7	1	
Total	13	25	5	0

The first meeting has been tabulated separately in each case and indicates the close similarity of the two groups during the first club session. We see that during thirty-nine "person-meetings" in only six cases did the proportion of objective ascendance exceed that of dominating behavior in the authoritarian group, while in only five cases out of thirty-eight "person-meetings" did the proportion of dominating ascendance exceed that of objective ascendance in the democratic club. Three members of the authoritarian group and all five members of the democratic group started with a higher proportion of objective than of dominating ascendance during the first meeting. Authoritarian group members seemed to shift downwards rather rapidly in this respect. The more inclusive categories of ascendant and matter-of-fact social behavior also indicate a relatively small overlap and a similar starting point for both groups. In only six out of thirty-nine cases did the proportion of objective behavior exceed that of ascendant behavior in the authoritarian group. In only thirteen out of thirty-eight cases did the democratic members show a larger proportion of ascendance than of objective behavior. In both groups all five members began with a higher proportion of ascendant than of objective activity. The democratic members seemed to gain in the proportion of this latter type behavior rather rapidly.

Summary of Relations of the Group Members to Each Other.—

1. Including the general conversation from the stenographic records the total social actions of the two groups were about equal. Omitting this category of interactions not directly related to behavior in the club situation, the authoritarian group members were more interactive (8 to 5) per unit of interaction-possibility.

2. About twice as many social interactions per unit of possibility occurred between in-group members as between out-group members in both clubs. About three-fifths of the democratic group's volume of social activity was between in-group members as contrasted to two-fifths of the interrelations of the authoritarian group.

3. A larger proportion of the social actions of the authoritarian

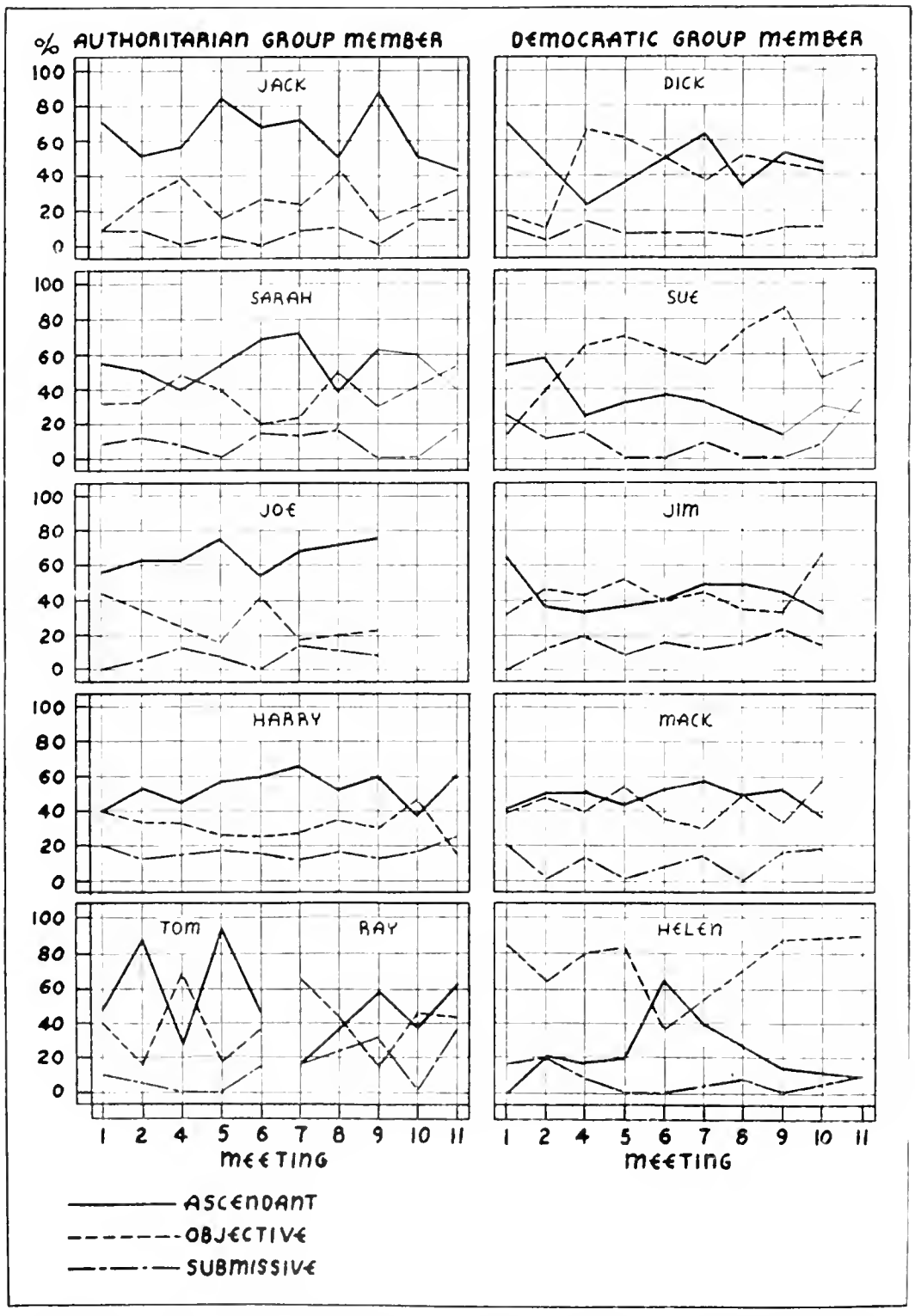


Figure 31. Individual Comparisons of Components of Ascendant Behavior

group members were ascendant actions. The analysis of components of ascendance indicated that the largest component was aggressive dominating behavior in the authoritarian group, and work-centered objective direction of behavior in the democratic group. Developmentally we noted that the authoritarian atmosphere tended to bring about increase in the proportion of dominating ascendance while the democratic atmosphere resulted in an increase in the per cent of friendly and objective components of ascendant behavior.

4. Submissive actions toward one another accounted for twice as large a proportion of the democratic group interactions as of the authoritarian group relations between the members. The democratic group members were relatively more submissive in out-group relationships than were the authoritarian group members, although there was actually more submissive behavior during in-group than out-group activity in both clubs.

5. The democratic group members were more objective in their relations with fellow members than were the autocratic group members. In terms of in-group and out-group relationships it was interesting to note that the authoritarian group members were slightly more objective in their out-group relationships than were the democratic members, but the latter were about twice as matter-of-fact during in-group interactions. This seemed to indicate a tendency among the authoritarian group members to be more objective in distant social relationships than at the more intimate co-worker social distance. We noted the developmental tendency toward more objectivity in the democratic group and less in the authoritarian group. Of especial interest were the two categories of general conversation, "in-the-club-field" and "out-of-the-club-field." The groups were equated in the former but the democratic group had a markedly larger common conversational life-space which was not restricted to the club situation.

6. Authoritarian group members ignored social approaches of fellow members about twice as often as democratic group members.

7. The analysis of social interaction chains indicated that while they began with an ascendant approach most often in both groups, they tended to begin ascendantly more often in the authoritarian group and submissively or objectively relatively more often in the democratic group. The chains ended ascendantly or with a refusal to respond more often in the authoritarian group and submissively or matter-of-factly more often in the democratic group. The num-

ber of persons engaging in each interaction chain was about the same for the two groups, but each chain contained more interactions in the democratic group.

8. From the vote on disposal of group property and the analysis of "I-centered" and "we-centered" conversation there was a rather clear indication that the democratic group had a stronger feeling of group unity and that the members were less ego-centered in their club relationships. The tendency to destroy the masks when the restrictions of the authoritarian atmosphere were withdrawn was also noted.

9. The analysis of the subgroup structures of the two clubs indicated, first of all, that the constellations comprising the structure were dictated by the leader about a third of the time in the authoritarian group and were never leader-imposed in the democratic group. We next noted that both in terms of number of occurrences and of duration of patterns the structure of the democratic group maintained a much higher degree of united pattern. It was noted that the authoritarian leader tended to influence the authoritarian group toward higher unity of structure, changing the activity groupings in the direction of a more united pattern twice as often as toward a more divided pattern. When the structuring influence of the leader was removed the group moved toward greater disintegration of structure twice as often as toward greater unity. Leader-initiated structures existed, on the average, more than twice as long as spontaneous ones in the authoritarian group. Democratic group spontaneous groupings had a more stable existence than member-formed authoritarian group structures, but had a shorter existence than leader-initiated groupings in the authoritarian atmosphere. Leader-initiated changes tended to more completely rearrange the entire group structure than did spontaneous changes.

10. The individual curves of dominating behavior and recipients of dominating behavior for the two groups indicated that twice during the life of the authoritarian group the dominating behavior of four members focused upon the fifth. Both members who were thus made scapegoats of group tension left the group soon after this loss in status. After each "scapegoat meeting" there seemed to be a temporary decrease in dominating behavior between the members and an increase in objective workmindedness. No concentration of hostility against any member occurred in the democratic group, and the curves of dominating behavior in this club indicated chiefly the absence of this type of behavior. There did

seem to be an indication that the individuals who were most dominating in their behavior generally received more dominating ascendance from the other members. The scapegoat situation in the authoritarian group was a striking exception.

11. The analysis of the behavior of the two members who were transferred in group membership from one atmosphere to the other indicated several behaviors of immediate maladjustment, but showed chiefly a striking change in components of social activity toward the style of living of the new group. The democratic group member found adjustment in the authoritarian atmosphere more difficult, resenting the lack of independence and deviating during the second meeting from the group project to her own individual activity. The authoritarian member was at a loss to adapt herself immediately to the process of group decision by discussion and to spontaneously participate in "duties" which had required leader-induced motivation in her former group. The changes in components of behavior with the change of group membership were shown in graphic representation. It is impossible to say here whether a longer period of life in the authoritarian atmosphere would have made the adjustment to the democratic group more difficult than the change in the other direction.

12. There were two significant shifts in popularity status in the authoritarian group from the original rankings, given by all classmates in the schoolroom situation prior to the club meetings, to the rankings given by the club members after the club sessions had concluded. Joe, who had been second in ranking dropped to fifth. He was the second group scapegoat. Ray, who had been absent during the original rankings, received a ranking of second. He was not an original group member but came in later as a substitute for Tom. Ray seemed to gain his high ranking by not being rejected by any one, rather than because he stood highest in popularity in the ratings of any of the other group members. Because of the submissive nature of his behavior he had never been a competitor for group status.

13. With the limited "individual differences in social background" data which he had on hand the investigator was unable to establish any significant relationships between individual differences in response to the same club atmosphere and individual differences in overlapping group memberships, such as the variations in parental authority of the home atmosphere. A tabulation from the individual, meeting-by-meeting curves of ascendant and objective

behavior, and of dominating and objective ascendance indicated very little overlapping, even in these rather gross measures, of the members of the two different clubs. The scope of individual differences in behavior within the particular club seemed to be insignificant in comparison to the general differences in behavior which were found in comparing the two social atmospheres.

Interpretations of the Intermember Relationships in the Two Atmospheres

The Volume of Social Action.— What is the meaning of the category, "total volume of social actions"? The *a priori* expectation of the investigator was that the democratic club would have a larger volume of social activity because of the every-member participation philosophy of the democratic method. Discussion replaced the leader-made decisions of the authoritarian atmosphere. Every point of decision would seem to demand more interaction. This logic was upheld by the finding that there were more interactions per interaction chain in the democratic group. However, a different line of reasoning would lead to the expectation of greater authoritarian group social activity because of more tension in the authoritarian situation. Observation during a group discussion would uphold the first logic, but observation during one of the frequent conversation battles in the authoritarian group would uphold the latter line of reasoning. It may help us, in solving this problem, to turn for a moment to the nature of the interactions.

We may think of every social interaction as a locomotion into some region of the social field. To be an *inter*action two or more members must be involved, so we may regard the conversational exchange as a group locomotion. It is interesting to realize that in making a social interaction with another person there is not only the locomotion toward each other by communication, but also both persons are going some place together, making a locomotion together into some social region. To know the nature of this social interaction field we need to know the content of the interaction (topic of conversation) and the type of interaction (submissive, hostile, etc.). The topics of conversation, their variety and nature, would probably give us an interesting indication of some of the dynamics of the social situation (e. g., the scope of common interests in the group). The type of interaction, which we have attempted to analyze in this study, probably is a more fruitful emphasis if the real meaning of the particular interpersonal relationship is

under inspection. The categories of social activity which have already been summarized give us the closest approximation we have, in this study, of the major regions of this social interaction field. Figure 32 represents this field for the two experimental groups, giving a rough approximation of the relative number of locomotions into each of the major regions. It will be remembered from Table 6 (p. 148) that the only real difference in the total number of social interactions is found when we make a distinction between in-club interaction field and the out-of-club interaction field in terms of content of the conversation. There was an indication then that a wider field of interaction content existed for the democratic club. Commonalty of interest included a larger number of "nonimmediate" regions of activity.

Before turning to the main interest, the reason for the disproportionate number of locomotions of one group into some regions and the other group into different regions, the investigator wishes to propose a tentative interpretation for this lack of difference in total volume of verbal activity in the two atmospheres. Our central hypothesis is that the forces co-ordinated to inner personal tension were much stronger in the authoritarian situation, and thus that the "personal forces" toward social expression ($f^{Pe}_{P,SoExp}$) were greater for the members in the authoritarian situation than for those in the democratic atmosphere[8]:

$$(1) \quad \left| f^{Pe,A}_{P,So\ Exp} \right| > \left| f^{Pe,D}_{P,So\ Exp} \right|$$

But this seems contrary to our observations, for we have already noted that the frequency of social interaction is about the same in the two club atmospheres:

$$(2) \quad \text{Freq.SoExp}^{A} = \text{Freq.SoExp}^{D}$$

To proceed further we need to distinguish three types of forces affecting the behavior of individuals: "foreign" or socially induced forces, "impersonal" or situationally induced forces, and "personal" or own forces. Frank[9] has delineated these three

[8] For an extended treatment of the use of psychological formulae see Lewin, The Conceptual Representation and the Measurement of Psychological Forces. Duke Univ. Series, Cont. to Psychol. Theory, 1938, 1, No. 4. Pp. 247.

[9] Frank, Jerome D.: The Influence of the Level of Performance in One Task on the Level of Aspiration in Another. J. Exper. Psychol., 1935, 18, 159–171.

sources of psychological forces in his studies of social pressure. He states, "*Foreign valences* are those which are regarded by the subject as directly representing the experimenter's wishes." (p. 167) In the discussion of the present study we have further divided socially induced forces into coercive and accepted induction, depending upon the relation of the direction of the induced force to the direction of the own force. In a previous discussion we noted that induction of goals and paths by the authoritarian leader was often coercive, while the induction by the democratic leader was such as to be easily rejected if not seen as having the same direction as forces co-ordinated to own needs. Continuing with Frank's definitions, we find he next states, "*Own valences* have the character for the subject of springing directly from his own wishes . . . *impersonal valences* have the character of springing directly from the properties of the action or object in question, without personal reference . . . these valences are dependent upon the structure of the objective situation" (p. 168, 171). We would include the "style of living" (cultural background) influences in this category. How does this classification of psychological forces help us to account for the volume of social expression of the club members in two social climates?

First, what was the nature of the impersonal force related to social expression, which existed in the two club situations? Observers immediately noticed, in this regard, that work locomotions in the democratic group demanded social expression (e. g., discussions for group decisions, planning) for their smooth functioning, while the dictating role of the authoritarian leader was such that the objective work situation demanded little from the members in the way of expression. To state the same fact in terms of psychological direction (d), we might say that the direction toward the goals (G) of the club for the democratic (D) members (P) was by the path of social expression (SoExp). In terms of a formula:

$$(3) \quad d^{D}_{P,G} = d^{D}_{P,SoExp}$$

For the authoritarian (A) group members this was not the case:

$$(4) \quad d^{A}_{P,G} \neq d^{A}_{P,SoExp}$$

The first statement concerning the relative forces related to social expression in the two atmospheres is that the induced impersonal or situational forces ($if^{Im}_{P,SoExp}$) were greater in the democratic group than in the authoritarian group:

$$(5)\quad \left| if^{Im,D}_{P,SoExp} \right| > \left| if^{Im,A}_{P,SoExp} \right| \quad \text{(favoring more social expression in D-situation)}$$

Second, what was the character of the foreign or socially induced force in the two experimental groups? The strongest source of social induction in each club was of course the leader. We have noted in the tabulation of results that by his asymmetrical social powerfield relationship with the members of the group the authoritarian leader tended to demand submissive obedience rather than to encourage free, spontaneous social expression as did the democratic leader. Wiehe's research [10] indicated that a general situation of social pressure may measurably block motoric activity including verbal activity. Our second statement then, comparing the induced social pressure forces ($if^{So}_{P,\ -\ SoExp}$), is that the social pressure against or away from (—) social expression was greater in the authoritarian group:

$$(6)\quad \left| if^{So,A}_{P,-So\ Exp} \right| > \left| if^{So,D}_{P,-So\ Exp} \right| \quad \text{(favoring more social expression in D group)}$$

So far we have postulated two sources of forces which would make for greater social expression in the democratic situation, but it will be remembered that the total conversational interactions in the two groups were about equal (see formula (2)).

Our third classification was that of personal forces related to the own desires of the person. From observation two major "own forces" seemed to be identifiable in the experimental situation: (1) the force co-ordinated to the goal of "mask-making," which might be called a "directed" force, in contrast to, (2) the force co-ordinated to emotional tension, essentially an "undirected" force. It will be remembered from the accounts in the group log (p. 75) that the goal of mask-making was equally strong and spontaneous for both groups during most of the club sessions.

$$(7)\quad \left| f^{A}_{P,G} \right| = \left| f^{D}_{P,G} \right|$$

Our previous discussion (see formulae (3) (4)) indicates that although these forces may have been equal, the goal directed force in the democratic situation implied the existence of more social expression as a means to the end than did the same force in the authoritarian group. Later in the series of club meetings it seems clear that the predominance of other goals in the authoritarian situation made for a weaker group goal directed force. Then later in the experimental series:

[10] Wiehe, F.: Die grenzen des ichs. Unpublished manuscript.

$$(8)\ \left| f^{A}_{P,G} \right| < \left| f^{D}_{P,G} \right|$$

This shift would seem to imply even less need for social expression in the authoritarian atmosphere. Summing up the forces for and against social interaction, as we have considered them thus far we find:

$$(9)\ \left| if^{Im,A}_{P,SoExp} \right| - \left| if^{So,A}_{P, -SoExp} \right| < \left| if^{Im,D}_{P,SoExp} \right| - \left| if^{So,D}_{P, -SoExp} \right|$$

This would seem to indicate clearly that the volume of social interactions in the authoritarian group should be considerably less than in the democratic club.

But we have one other force to consider — the personal force which is a function of emotional "undirected" tension. Several findings seem to indicate conclusively that the members of the authoritarian group were in a considerably higher state of inner tension than the democratic group children (e. g., scapegoat release, hostility, destructive behavior toward the masks, physical behavior during last club meeting, etc.). If our interpretation is correct, and inclusive enough, we are then in a position to postulate that strong inner-personal forces making for more social expression ($f^{Pe}_{P,SoExp}$) existed in the authoritarian situation:

$$(10)\ \left| f^{Pe,A}_{P,SoExp} \right| > \left| f^{Pe,D}_{P,SoExp} \right|$$ (favoring more social expression in A-situation)

And this emotional outlet force was greater in authoritarianism to such an extent that:

$$(11)\ \left| if^{Im,A}_{P,SoExp} \right| - \left| if^{So,A}_{P, -SoExp} \right| + \left| f^{Pe,A}_{P,SoExp} \right| - \left| if^{Im,D}_{P,SoExp} \right| - \left| if^{So,D}_{P, -SoExp} \right| + \left| f^{Pe,D}_{P,SoExp} \right|$$

A further interpretive analysis of the difference in general tension level of the members in the two group atmospheres follows:

The Overlapping of Personal Needs and Group Situation.— The growing amount of dominating behavior by the authoritarian group members and the several outbreaks of overt hostility seemed to indicate that tension producing factors existed in the authoritarian atmosphere which did not exist in the democratic situation. We have already identified three major factors (Figures 15, 10, 18) as — restricted space of free movement, an asymmetrical, weakening relationship with the powerfield of the leader, and a lack of individual status in the group structure. The results point to the con-

clusion that it was not the lack of opportunity to work on a task of considerable interest that made the authoritarian group members rather vaguely dissatisfied with their club situation, *in spite of* the interesting activity. Rather it was a social frustration, a lack of satisfactory freedom and power to "possess" for oneself goals and means of locomotion that affected the members. From the reactions of the members to this frustration the investigator believes the most basic effect of this social situation was a loss of security and thus a heightened state of inner tension related to the lowered social status. This insecurity of group status put the authoritarian group member in two overlapping psychological situations with conflicting goals (Figure 33, authoritarian, p. 157). The most dominant personal goal of the authoritarian group member finally became, as the club meetings progressed, a more satisfactory social status, while the most dominant induced goal, still somewhat attractive and partially accepted by the member, was the mask-making activity. In the democratic group the leader's respect for individuality (Figure 18, democratic, p. 138) made the need for greater social status a very minor goal (Figure 33, democratic, p. 157). The present writer regards most of the member-to-member relationships which were reviewed in the preceding summary of experimental results as reflections of the differences in strength of the work and status goals and the nature of the connections between them in the two different club atmospheres. The situation in the same atmosphere of course changed from time to time.

The reader has probably already questioned whether the club activity goals and the goal of more satisfactory group status, did not have the same direction to a large extent; in other words, wasn't good work a means to higher status? Consider the meaning of the work situation for the group members. To gain a more secure social status in the authoritarian situation meant to become somehow more recognized as an "individual" (Figure 18) and thus to increase his social powerfield in relation to the other members of the group, and especially the leader. We have seen that dominating demands for the attention of the leader to their work seemed to be one attempt of the authoritarian members to gain status. These incidents are a clear indication that sometimes the craft activity was viewed as a possible means to more satisfactory social status (Figure 34, authoritarian, p. 158). From the group log we find that the democratic members also asked for approval from time to time. Reading those incidents one finds an interesting difference

from the authoritarian group situation. The attempt to gain recognition for good work usually was directed to the group as a whole in the democratic situation and was most often given by the other child members (Figure 34, democratic) who praised each other much more often than did the authoritarian members (Table 6). In the authoritarian group this means of gaining status tended to be very unsatisfactory. First of all, the source of status (the leader) was also the source of power-depletion, and thus there was often a negative valence (Figure 20, authoritarian, p. 138) to member initiation of social interactions toward him. Also, the demand for attention was most often met by an impersonal remark of approval or further directions as to what to do next. We come to the conclusion that in this particular authoritarian atmosphere the leader's domination of the work situation and his function as a restrictor of free movement seemed clearly to bar a work-minded path to social status. In the democratic atmosphere work abilities were the clearest path to social status.

The Interpersonal Relations of the Members.— The other possible source of recognition (besides the leader) in the authoritarian group was of course recognition by the other child members of the club. Can the dominating hostile relationships which developed between the members be explained in terms of the polarization of individual social activity toward a goal of higher status in the club? The experimenter believes that they can.

To get recognition from fellow group members various paths of social action are open in most groups, but these seem to be capable of classification under two main headings: recognition by gaining a position of leadership, and recognition by gaining a position of domination (Figure 35, p. 158). A position of *leadership* implies the voluntary acceptance of the leader's superior status; a position of *domination* requires a dominator-induced acceptance by the other members of the dominator's superior status. What were the possibilities of child *leadership* in the two club situations? The first barrier, varying greatly in degree in the two clubs, was the adult leader himself (Figure 36, p. 158). In both groups the central position in the group structure was occupied by the adult (Figure 36). In the democratic group this region of centrality was much more accessible to other group members (Figure 36, democratic), chiefly because of the enlarged work perspective which the members had, and because the leader's powerfield was friendly and of more equal strength.

That the democratic group members did ask each other for information and take a part in policy formation, and give suggestions to each other is clearly indicated in Table 6 (p. 148). In the authoritarian group the weakness of the powerfield of each member as compared to the leader, in the work situation, made access to the central region of group structure clearly impossible (Figure 36, authoritarian, p. 158).

The second barrier to a position of leadership was the members themselves. The competition for leader attention noted in Figure 19 gives us a clue to this difficulty for the member of the authoritarian group. With every member having as his dominant goal higher, more secure status (Figure 33, p. 157) a situation of competition existed, for to reach such a position meant to gain a more central region than the other members. This central region, if it was to be a region of leadership, represented a region of acceptance by the others of his leadership status. With all members having the same goal this was clearly impossible, for no member would consent to a gain in status by a fellow member (Figure 37, authoritarian, p. 159). It would mean a relative loss in status for himself.

In the democratic atmosphere the step into a position of leadership was much less difficult, each member had a feeling of being somewhat in the region already and was thus willing to recognize superior abilities of a fellow member (Figure 37, democratic) in a particular situation. It meant no loss for the other members. On the contrary, because recognition was usually connected with work on a club project and "we-feeling" was strong, the gain of one member was to some extent a gain for all members. We have already noted that the potency of the status goal was much less in the democratic situation (Figure 33).

There is also a third possible explanation of why a barrier to superior status by leadership methods existed in the authoritarian situation. The study of frustration by Barker and Dembo (2) has indicated clearly that the effect upon the person of high tension due to frustration of goal locomotion is often a dedifferentiation or primitivation of the personal structure (Figure 38, p. 159). In their experiments the behavior result was a drop in play constructiveness to a lower mental age level. We might hypothesize that in our experiment, where the barrier was to a goal of higher social status rather than to more interesting toys, the frustration produced tension which resulted in a primitivation of the techniques of social relationship with other individuals. Pigors (37)

has summarized a number of experiments in child psychology which seem to indicate that domination is a more infantile means of gaining social recognition than is leadership, the latter demands more insight into the nature of the follower. The present investigator would suggest also that the work of Piaget (36) indicates a relationship between a more undifferentiated personal structure, and a predominance of egocentered behavior. The growth in differentiation is toward more understanding of the viewpoints of other persons as differing from one's own. The egocentric point of view is essentially that of the dominator. Leadership demands a recognition of the particular individuality of the persons being led.

These three barriers, the leader, the competition for status, and the effect of tension upon the person, seem to explain tentatively why the development of leadership as a technique for gaining social status was so difficult in the authoritarian atmosphere, and why it could and did develop to a larger degree in the democratic group.

With only the path of domination left open for the member of the authoritarian group, (Figure 39, p. 159) it becomes clear why the tension which existed found outlet as often as it did (Figure 27) in dominating ascendance. It would seem logical to expect, then, that a hierarchy of social positions, from the strongest to the weakest, would develop from the interactions of the authoritarian group members with each other. There seems to be a reason why this clear-cut stratification did not develop. The authoritarian leader's powerfield overlapped that of each member to about the same extent; he made little discrimination in his instructions and work praise. Thus each member was weakened in the group situation to about the same extent by his relationships with the leader (Figure 10, authoritarian, p. 116) and thus no one member was in a position to dominate the others. We have noted already that the influence of the leader had quite a different effect upon the member in the democratic group (Figure 10, democratic, p. 116). In these small groups of five members, each member was almost continually overlapping in his contacts the powerfield of all the other members. In the authoritarian group this meant that each member, in his efforts toward superior status, was in almost continual competition with all of the other members (Figure 40A, p. 160). That social distance made some difference in the strength of these overlapping relationships seems indicated by the differences noted between in-subgroup and out-subgroup interactions. In a larger group we would expect the distance of the relationships to be of considerable importance,

but the face-to-face nature of these clubs made for a rather homogeneous overlapping of social powerfields, and thus a mutual weakening of the influence of each member. With a situation of every member attempting to dominate every other member we can realize that there was little chance of any of the members reaching, by his own efforts, a more satisfactory position in the group structure. Twice during the eleven meetings of the authoritarian group a constellation of forces arose within the group that seemed to momentarily upset this equilibrium of forces and thus relieved the tension. This was the scapegoat situation. In Figure 41a (p. 160), we have represented what seemed to be the major shift in interpersonal dynamics from that indicated above (Figure 40a, p. 160). Instead of each member weakening each other member, a polarization of dominating attack took place against the powerfield of one member of the group. This had the momentary effect of considerably strengthening each attacking member because (1) it meant the withdrawal of the domination of the other three members who were attacking the scapegoat, and (2) if advanced each member one step toward his goal of social status by giving him an obvious superiority over one other member of the group. This attack seemed to serve momentarily as a partial release of the individual tension co-ordinated to the goal of social status. We could predict, however, that this would not last long. With the scapegoat defeated (in both cases he soon withdrew from the situation), the equivalence of status of the other four members would again bring about the mutual dominating interactions.

The question arises as to what kind of group members were made scapegoats. Why wasn't Ray, the submissive member of the group, made the second scapegoat rather than Joe who had been rated as second in popularity at the beginning of the club sessions? One possible answer is suggested by the fact that Tom and Joe had been rated as the two leaders in the school situation and thus, in the eyes of the other members, may have had a somewhat higher status in the authoritarian situation. Why should a slightly stronger person be attacked? The attitude of the other members toward Ray, the submissive substitute for Tom, seems to give a clue. Ray was no real competitor for social status. When he entered the group after Tom had quit, it was quite clear that he occupied, and continued to occupy, a position of somewhat more peripheral status than the other four children. To attack a member of peripheral status would perhaps not be regarded as a locomotion toward a position of more

centrality than that in which the attacker already stood. Perhaps, then, an attack upon an individual of somewhat superior status represented the most satisfying means of gaining a more central position. The leader was too strong to be attacked, and was not directly blamed for the atmosphere of the club life. But Tom and Joe were not very much stronger and were thus accessible to attack. We might have explained the concentration upon Tom as a function of his lower popularity score as well as his higher leadership rating, but Joe had had a high popularity rating.

"*I-Mindedness*" *and* "*We-Mindedness*".—The roots of the greater egocentrism in the authoritarian group and the greater display of collective spirit in the democratic atmosphere have been pointed out. What this meant in terms of group belongingness and group goals is of interest. There is no mystic group mind in this concept of group goal or valence. We can speak of group locomotions in a group field as contrasted to individual locomotions in the individual life space, using the same operational definition for locomotion and valence which have been used in individual psychology. To account for the components of the force related to group locomotion toward a group goal we tentatively postulate that the force acting upon the group is *related to* the totality of the forces acting upon the individual members in the direction of the group goal. And this strength of the group goal for the individual is dependent upon his feeling of belongingness to the group. But obviously the office boy and the president of the corporation may have the same feeling of belongingness to the group goal and still their contributions to any particular group locomotion will be quite different. We must add then that the specific action which corresponds to a given amount of individual force toward the group goal depends upon the position of the member in the group structure with its different degrees of stratification, and the direction of his individual effort.

Summarizing Statement

The investigator has summarized at the conclusion of each section of results the major quantitative results and his interpretation of them. No further condensation of results needs to be made. The main factors of the interpretive remarks may be summarized briefly:

1. The leader functioned in the authoritarian atmosphere as a strong, central, organizing subpart of the group structure having

an asymmetrical relationship with other subparts. He barred members from individual goals which did not coincide with the particular goals he set for each member. The leader also reduced the space of free movement of each member by keeping in his possession the future subregions of the locomotion toward the group goal, as well as restricting the richness of means behavior of each member. The authoritarian leader dominated in the interpersonal relationships of the group by dictating the form of the subgroup structure, and as a general result depleted rather than increased the social powerfield of each group member.

2. In the democratic atmosphere the leader attempted to recognize individual goals and make these goals more accessible. When inducing goals he tried to make them attractive and left the actual goal-setting to the member. He made possible a variety of means behavior from which each member could choose. The democratic leader also structured cognitively for the children the total mask-making situation so that each new region could be viewed with the perspective of its connectedness to the final group goal. The result of the overlapping of members' powerfields with the leader's seemed to indicate a helping rather than depleting influence of the leader's power. This made for greater symmetry of leader-child relationship.

3. The various types of restriction to freedom of movement and spontaneity of development in the authoritarian situation as compared with the democratic atmosphere, seemed to be clearly reflected in the differences in social approach and response of the club members toward the leader, and in the development of different patterns of interpersonal relationship between the child members of the group. In general these social resultants seemed to indicate that the efforts of the leader toward a differentiation of the two experimental group situations into democratic and authoritarian atmospheres with certain predetermined characteristics were successful. A variety of quantitative and qualitative results were summarized which seemed to fit together into a consistent picture of major differences in the two club lives. These differences, it was also noted, developed quickly, after the two clubs had begun meeting in the experimental club situation from a rather common starting point on the day of the first meeting. As far as could be determined from a study of the meeting-by-meeting curves of the clubs they were quite successfully matched in "original nature." The major factors of group difference which were interpreted from

the experimental results by the investigator may be briefly summarized as:

a. The authoritarian group members, by means of their access to comparatively free conversation made some attempts to deplete the powerfield of the leader. This reaction to a dominating powerfield did not appear in the democratic group. Attempts toward more secure social status in the group structure by leader recognition were also made.

b. By setting up barriers to social approach around relatively peripheral layers, as well as the central ones, of their personal structure, the authoritarian group members attempted to resist the domination of the leader's overlapping power. The members in the democratic situation remained accessible to more personal approaches from the leader.

c. Potent individual goals arose in the authoritarian group which seemed to be co-ordinated to the need for a more "unique" status in the group. These goals seemed to conflict with the work goals of the club activity, largely because of the domination of the work region by the main source of restriction, the leader. Work activity goals seem to continue as the most important goals in the democratic situation.

d. The locomotions toward social status by the members of the authoritarian group seemed to result in a situation of conflict between the members. The barrier to child leadership presented by the authoritarian leader's position, and the probability that individual tension resulted in "I-centeredness" indicated further reasons for the predominance of the hostile style of living in the authoritarian atmosphere. The democratic group members were barred from leadership recognition to a much lesser extent by the adult leader's position in the group structure, and there was little evidence of any conflict for status in this situation. A higher degree of "we-centeredness" was noted in the behavior of the democratic group members.

e. The unsatisfactory labile equilibrium resulting from mutual competition for status among the members in the authoritarian group seemed to be resolved momentarily by a polarization of hositility against one of the members, one of the strongest in both cases. There was little tendency to attack the weakest member. No interpersonal tension or need for release of this hostile type was apparent in the democratic group.

f. The feeling of group belongingness with its consequent polarization of member-activity toward a group goal seemed to diminish in the authoritarian atmosphere. There was even a tendency to destroy the results of group efforts, the masks, when the dominating factors of the club atmosphere were relaxed on the last meeting. The group goal was much more potent as a determiner of member activity in the democratic situation and the group products were more truly a collective possession, disposed of by a group decision.

g. There was a tendency toward disintegration of group structure pattern in the authoritarian group, unless the more rigid influence of the leader dominated the structure. There was greater spontaneous stability and more united pattern of structure in the democratic atmosphere.

h. More creative and constructive work products emerged from the higher unity of the democratic life with its greater amount of objectivity and cooperativeness of interpersonal relationships. The last meeting of the authori-

tarian group indicated the existence of an underlying hostile attitude toward life in the authoritarian situation.

CONCLUDING STATEMENTS

Rather than concluding with any generalizations from the results of this preliminary investigation the writer wishes to reiterate his caution against too hasty generalization. It is necessary to repeat that the purpose of this experiment was not to test "the" democracy or the "ideal" autocracy. A great variety of each of these social climates is possible. The purpose was to attempt to study the dynamics of the social factors involved in one example of each of these atmospheres rather than to copy any historically given examples. The development of a "total field" methodology of attacking these problems *experimentally* was also a major interest. So much that has been called experimental sociology or experimental social psychology has failed completely to show any interest in the first principle of experimentation, the manipulation of the variable or variables being studied. It has failed thus to be experimental in any true sense. Refining the observation of social behavior does not make the procedure experimental.

To study social behavior experimentally does not necessitate the introduction of "artificial" factors into the situation. As Lewin (26, p. 317) points out:

> "The absolute *size* and *intensity* of a psychological event or 'object,' like a group, is of course important in psychology. More important, however, is the *type* of the event and the *pattern* of the setting. If an experiment is able to create the *constellation* it wishes to study, even though on a smaller scheme, it will go quite a way toward understanding the laws of this constellation."

There was considerable interest, therefore, on the part of the present investigator, in experimenting with a methodology which had the advantage of including sociological, socio-psychological, and psychological data on behavior in an integrated approach which could truly be called experimental. The concepts of topological and vector psychology seem to give promise, with further development, of proving as useful for sociological and socio-psychological problems as they have proved to be in individual psychological research. This would be a much needed step in the direction of breaking down some of the barriers which have persisted to separate these essentially interrelated fields.

The results of this preliminary survey seemed fruitful enough to warrant further development of the experimental and observation techniques utilized. Four new clubs were organized,[11] after a much more thorough study of the problems of preliminary control by choice of club members, collection of sociological data concerning other group memberships, and better psychological measurement of each group member. In a far more interesting setting each club lived through six weeks of "democratic," six weeks of "autocratic," and six weeks of "laissez-faire" leadership. These social climates followed in different order for the different groups. The four club leaders altered their type of leadership as they each developed the atmosphere in three different clubs. Thus a control of original group differences and the effect of "leader personality" was possible. Many new possibilities of experimental group manipulation were investigated. Some interesting variations from the results of the present study seem apparent from a brief survey of the unanalyzed data.

A third study is in progress[12] which is utilizing a revision of the methods reported in this study. It is an attempt to study experimentally some of the socio-psychological problems of minority group membership with groups of girls. A rather wide range of other problems which might be fruitfully attacked with a similar approach must come to the mind of the reader with a special interest in social psychological problems which have hitherto usually been chopped up rather ruthlessly by being relegated to the sociologist or the psychologist for study, or for speculation.

In the opinion of this investigator no social scientist has the right to set up his research without some attention to the "social value" criterion of his research interest. The "laboratory *in* the social order" should replace the "laboratory *and* the social order" type of psychological investigation. For the present writer this criterion is met in the study herein reported. A scientifically oriented approach to the individual and his personal adjustments by way of his group memberships and position in the social structure appeals to the investigator as a step toward some new interpretations which should have value for the practices of education, mental hygiene, and psychotherapy.

[11] The previously mentioned study by R. K. White and R. Lippitt.

[12] By Mrs. M. Gordon Thompson of the Iowa Child Welfare Research Station.

REFERENCES

1. Anderson, Harold H.: Domination and integration in the social behavior of young children in an experimental play situation. Genet. Psychol. Monog., 1937, 19, No. 3, 343–408.
2. Barker, R., Dembo, T., and Lewin, K.: Experiments on frustration and regression in children. Unpublished investigation.
3. Benedict, R.: Patterns of culture. New York: Houghton Mifflin, 1934. Pp. xiii, 291.
4. Boggess, V.: Some factors accounting for the variation in the social adjustment of children living in a tenement area. Smith Coll. Stud. in Soc. Work, 1936, 6, 324–359.
5. Brown, Junius Flagg: Psychology and the social order: An introduction to the dynamic study of social fields. New York: McGraw-Hill, 1936. Pp. xiv, 529.
6. Busch, Henry M.: Leadership in group work. New York: Association Press, 1934. Pp. vi, 305.
7. Butler, Nicholas Murray: The paradox of despotism. School & Soc., 1937, 46, 424–427.
8. Chevaleva-Janovskaja, Eugenie: Les groupements spontanes d'enfants a l'age prescholarire. Arch. de psychologie, 1927, 20, 219–233.
9. Coyle, Grace L.: Studies in group behavior. New York: Harpers, 1937. Pp. x, 268.
10. Dashiell, J. F.: An experimental analysis of some group effects. J. Abnorm. & Soc. Psychol., 1930, 25, 190–199.
11. Dembo, Tamara: Der Ärger als dynamisches Problem. [Anger as a dynamic problem] Psychol. Forsch., 1931, 15, 1–144.
12. Dimock, Hedley S.: Rediscovering the adolescent: A study of personality development in adolescent boys. New York: Association Press, 1937. Pp. xx, 287.
13. Dollard, J.: Caste and class in a southern town. New Haven: Yale University Press, 1937. Pp. 502.
14. Doroschenko, Olga: Der Einfluss des Milieus auf den Inhalt und Aufbau frei entstehender Kollektive im vorschulpflichtigen Alter. Zsch. f. angew. Psychol., 1928, 30, 150–167.
15. Dunham, H.: The ecology of the functional psychoses in Chicago. Amer. Soc. Rev., 1937, 2, 476–479.
16. Faris, R. E. L.: Demography of urban psychoties with special reference to schizophrenia. Amer. Soc. Rev., 1938, 3, 203–208.
17. Gosling, Thomas W.: A democratic way of life for pupils in the high school. School & Soc., 1937, 46, 339–342.
18. Hanfmann, Eugenia: Social structure of a group of kindergarten children. Amer. J. Orthopsychiat., 1935, 5, 407–410.
19. Harris, Pickens E.: Changing conceptions of school discipline. New York: Macmillan, 1928. Pp. xviii, 384.
20. Jack, Lois: An experimental study of ascendant behavior in preschool children. [In] Jack, Lois M., Manwell, Elizabeth Moore, Mengert, Ida Gaarder, and others: Behavior of the Preschool Child. Univ. Iowa Stud., Stud. in Child Welfare, 1934, 9, No. 3, Pp. 171. (p. 7–65)
21. Jennings, Helen: Structure of leadership—development and sphere of influence. Sociometry, 1937, 1, 99–143.
22. Johnson, Alvin S.: Conditions of democratic control. J. Adult Educ., 1937, 9, No. 3, 241–244.
23. Karsten, A.: Psychische Sättigung. Psychol. Forsch., 1928, 10, 142–254.

24. Lasswell, Harold D.: What psychiatrists and political scientists can learn from one another. Psychiatry, 1938, 1, 33–39.

25. Lewin, Kurt: Principles of topological psychology. New York: McGraw-Hill, 1936. Pp. 231.

26. Lewin, Kurt: Experiments on autocratic and democratic atmospheres. Soc. Frontier, 1938, 4, 316–319.

27. Lindeman, Edward Christian: Social discovery: An approach to the study of functional groups. New York: Republic Publishing Co., 1924. Pp. xxvii, 375.

28. Maller, Julius Bernard: Cooperation and competition: An experimental study in motivation. Teach. Coll., Columbia Univ., Cont. to Educ., 1929, No. 384, Pp. 176.

29. Maslow, A. H.: The role of dominance in the social and sexual behavior of infra-human primates: IV. The determination of hierarchy in pairs and groups. Ped. Sem. & J. Genet. Psychol., 1936, 49, 161–198.

30. Mayo, Elton: The human problems of an industrial civilization. New York: Macmillan, 1933. Pp. 194.

31. Mead, Margaret: Coming of age in Samoa: A psychological study of primitive youth for western civilization. Foreword by Franz Boas. New York: Morrow, 1928. Pp. xv, 297.

32. Miller, Clyde R.: Just what are these "isms"? Clearing House, 1937, 12, 73–80.

33. Moreno, J. L.: Who shall survive? A new approach to the problem of human interrelations. (Nervous and Mental Disease Monograph Series No. 58) Washington, D. C.: Nervous and Mental Disease Publishing Co., 1934. Pp. xvi, 437.

34. Murphy, Lois Barclay: Social behavior and child personality. New York: Columbia University Press, 1937. Pp. 330.

35. Newstetter, Wilber I., Feldstein, Marc J., and Newcomb, Theodor J.: Group adjustment: A study in experimental sociology. Cleveland, Ohio: Western Reserve University, [c. 1938] Pp. xv, 154.

36. Piaget, Jean: The moral judgment of the child. London: K. Paul, Trench, Trübner, 1932. Pp. ix, 418.

37. Pigors, Paul: Leadership and domination among children. Sociologus, 1933, 9, No. 2, 140–157.

38. Pigors, Paul: Leadership or domination. New York: Houghton Mifflin, 1935. Pp. xiii, 354.

39. Reiniinger, Karl: Das sociale verhalten von schulneulingen. Wiener arbeiten zur padogogischen psychol., heft 7, Wien, 1929, Pp. 14. Cited by Pigors, Paul: Leadership and domination among children. Sociologus, 1933, 9, No. 2, 140–157.

40. Riddle, Ethel M.: Aggressive behavior in a small social group: Bluffing, risking, and the desire to beat being studied by the use of a poker game as an experimental technique. Arch. Psychol., 1935, 12, No. 78, Pp. 196. (p. 9–22)

41. Rombach, Josef: Das soziale Verhalten des Siebenjährigen. Zsch. f. angew. Psychol., 1928, 30, 369–429.

42. Salusky, A. S.: Collective behavior of children at a preschool age. J. Soc. Psychol., 1930, 1, 367–378.

43. Schuman, F. L.: The nazi dictatorship: A study in social pathology and the politics of fascism. New York: Alfred A. Knopf, 1935. Pp. xiv, 494.

44. Sheffield, Ada E.: The "situation" as the unit of family case study. Soc. Forces, 1931, 9, 465–474.

45. Skeels, Harold M.: The relation of the foster home environment to the mental development of children placed in infancy. Child Develop., 1936, 7, 1–5.

46. Thomas, Dorothy Swaine: An attempt to develop precise measurements in the social behavior field. Sociologus, 1933, 8, 436–456.

47. Thrasher, Frederic M.: The gang: A study of 1,313 gangs in Chicago. Chicago, Ill.: University of Chicago Press, 1927. Pp. xxi, 571.

48. Wellman, Beth L.: Growth in intelligence under differing school environments. J. Exper. Educ., 1934-1935, 3, 59–87.

49. Whitehead, Thomas North: Leadership in a free society. Cambridge: Harvard University Press, 1936. Pp. xv, 266.

50. Williams, John Paul: What can the teachers do to increase American democracy's chances of survival? School & Soc., 1938, 47, 182–184.

51. Witmer, Helen L., and students: The outcome of treatment of children rejected by their mothers. Smith College Stud. in Soc. Work, 1938, 8, 187–234.

52. Wrightstone, J. Wayne: Appraisal of experimental high school practices. New York: Teachers College, Columbia University, 1936. Pp. xiii, 194.

53. Zuckerman, Solly: The social life of monkeys and apes. London: K. Paul, Trench, Trübner, 1932. Pp. xii, 357.

PART THREE

THE EFFECT OF SUCCESS AND FAILURE UPON THE LEVEL OF ASPIRATION AND BEHAVIOR IN MANIC-DEPRESSIVE PSYCHOSES

by

Sibylle Korsch Escalona

THE EFFECT OF SUCCESS AND FAILURE UPON THE LEVEL OF ASPIRATION AND BEHAVIOR IN MANIC-DEPRESSIVE PSYCHOSES

THE PROBLEM

The Concept of the Level of Aspiration

The term "level of aspiration" has been used extensively during the last seven years in experimental studies concerning the problems related to success and failure. The concept was first developed in a study by Tamara Dembo, "Der Ärger als Dynamisches Problem" ["Anger as a Dynamic Problem"] (2). In this study anger was created by confronting the subjects with a problem for which no correct solution existed. Dr. Dembo found that after the subjects had failed to find the correct solution of the problem they frequently showed a tendency to shift their goal from "finding the correct solution" to "finding some sort of a solution," however unsatisfactory. Although all subjects tended towards such a substitute solution, only a few actually carried it out and, in addition, those subjects who overstepped the rules of the task as given by the instructions did not appear to be satisfied with their performance, but on the contrary showed embarrassment and anger directed against themselves. Dembo relates this finding to the presence of a level of aspiration (Anspruchsniveau), which seemed to determine which performances would be counted as a success by the subject, and which as a failure.

The first systematic study of success and failure, based on the level of aspiration concept, was carried out by Hoppe (9) in 1930. Hoppe investigated the conditions under which a person will experience success or failure in a variety of task situations. He found that the subjective experience of success does not depend upon the actual performance as much as upon what the person expected of himself. Thus, if in a task of target shooting, after some preliminary experience, a subject feels fairly sure that he can hit, for instance, the fifth ring from the center and then hits only the seventh, he is likely to be disappointed and to experience failure. If then during subsequent trials he always hits somewhere between

the seventh and the sixth ring from the center and then again hits the fifth one, he is likely to experience success as he no longer expected to do better than six. In this case then a subject experienced once success and once failure in respect to the identical achievement. This specific goal, the level of difficulty which a person chooses to attempt in a situation where he has a choice between tasks of different degrees of difficulty, is what Hoppe terms the subject's level of aspiration. As the procedures used in our study were developed largely on the basis of Hoppe's work it will be necessary to discuss some of his results in greater detail.

If a task is structured in such a way that many different solutions of different degrees of difficulty are possible, as in target shooting for instance, and the subject is allowed as many trials as he desires, the level of aspiration does not remain constant but ordinarily shifts from trial to trial. In other words, the subject's expectation in regard to the quality of his own achievement varies with his varying experience on the task. To return to the target shooter, if he at first expects to be able to hit at least five, and then finds himself unable to reach this goal, on his second trial he will be less certain of his ability and perhaps set his level of aspiration for "at least six." Then again, after having accomplished a hit at the third ring from the center, his level of aspiration may be raised to "at least three." After observing these shifts of the level of aspiration in many subjects Hoppe found that they are not arbitrary, but, on the contrary, follow quite definite rules. He found, and his results have since been confirmed by the work of a number of other investigators, that ordinarily, *after the experience of success the level of aspiration is raised, and after the experience of failure the level of aspiration is lowered.* This statement does not imply that all subjects raise or lower their level of aspiration after only one experience of success or failure; in fact, the individual differences in the amount of failure which it takes to make a person lower his level of aspiration, and the amount of success which will encourage him enough to raise his level of aspiration are of extreme interest from a characterological point of view. This problem will be discussed at length in connection with our own results at a later time.

Hoppe found that a level of aspiration is not developed for all tasks, but only for those that lie within a certain range of difficulty which he terms the "borderzone of ability." If a task is too easy to offer any difficulty no level of aspiration is formed in relation to

it, and achievement will not be accompanied by success. Thus very few of us experience a feeling of success when we accomplish the feat of lacing our shoes, but a child for whom this task offers many difficulties may be elated for days after having accomplished the same thing. On the other hand, a level of aspiration is also not formed if a task is obviously too difficult in relation to our ability. We do not experience failure if we cannot lift a weight of 500 pounds.

Another important factor in this connection is that the person must ascribe the accomplishment to himself as a person. If the subject did not hit the target because the arrow was defective, he will not experience failure but will say, "Well, that was because something was wrong with the arrow," and the incident will have no influence on his level of aspiration.

Summarizing some of Hoppe's most important results we may say that the experience of success and failure depends not so much upon the actual achievement as upon the relationship between this achievement and what he had set out to do, i. e., his level of aspiration. In a series of trials within the same task the level of aspiration may shift from trial to trial. Under Hoppe's experimental conditions the subjects typically raised their level of aspiration after success and lowered it after failure. In order to develop a level of aspiration, it is necessary that the task lie within the border zone of ability, and that the subject ascribes the achievement to himself as a person.

Hoppe's study was made almost entirely on a qualitative basis. Jucknat (11) undertook an elaborate quantitative investigation of the same topic which was published under the title of *Achievement, Level of Aspiration, and Self Esteem.* In order to have a quantitative measurement of the subject's level of aspiration she devised the following technique. Ten paper and pencil mazes of increasing size and complexity were laid out on a table in the form of a ladder, the smallest and easiest task being at the bottom and the largest and most difficult one at the top.[1] The subject was then informed of the difference in the difficulty of the tasks and instructed to choose any one of the tasks and work on it at another table. The particular maze which the subject selected was considered his momentary level of aspiration, as it was the one which he apparently expected to be able to do. Whether the subject raised or lowered

[1] See Figure 1, p. 209.

his level of aspiration, and to what degree, could then be measured by the difference between the subject's successive choices.

Another improvement in the technique of measuring the level of aspiration which was introduced by Jucknat is that the experimenter controls whether the subject is going to have success or failure, which made possible a more systematic comparison of the behavior after these two types of experience. This was accomplished by devising one set of ordinary mazes, and one set of mazes which look as if they could be solved, but for which there exists no solution. One group of subjects were given first the mazes on which they had success, and after a pause those on which they failed, while the order was reversed with another group of subjects.

Jucknat's (11) findings substantiated Hoppe's (9) work. Several of her more specific findings will be discussed later, in comparison with our own.

Jerome D. Frank (3, 4, 5, 6) has used the level of aspiration technique extensively and published four articles on different aspects of the problem. He used tasks of a somewhat different nature, such as printing with the fastest possible speed, ring tossing, and an intellectual task with a performance scale of speed. He found that the laws of the level of aspiration, as described above, apply to all of these very different kinds of tasks. His primary interest is in the psychological determinants of the level of aspiration and in the individual differences observed in this situation.[2]

In the study about to be reported we have followed Jucknat's technique very closely. We define the level of aspiration as follows: In a situation where a subject is confronted with many tasks of the same kind (peg board tasks or paper and pencil mazes) which are arranged in the order of difficulty, we call his momentary level of aspiration that task which he undertakes to accomplish on the next trial, as evidenced by his choice.

[2] There is some question in our mind as to whether Frank's use of the term level of aspiration coincides entirely with that of Jucknat. In his experiments the subjects were not given a choice of tasks of varying difficulty as was the case in Jucknat's experiments and in our own, but were asked to state verbally how well they expected to do on the subsequent trial. It is conceivable that a subject might state a goal which he expects or hopes to attain but which he would not choose if the choice had to be made in the form of action rather than on the verbal plane. The forces determining such a "verbal level of aspiration" should be much the same as those determining the level of aspiration in our sense so that the use of one term for two slightly different meanings does not give rise to misunderstandings.

The Problem of Success and Failure in the Manic-Depressive Psychoses

We have every reason to believe that the experiences of success and failure are of central importance for adjustment and personality development in normal individuals. This is true to a much greater degree for the abnormal behavior which is clinically classified under the manic-depressive psychoses. A brief summary of the main symptoms of this disease will elucidate this point.

According to all psychiatric and psychological descriptions the manic patient has an exaggerated conception of his own powers. He is happy and excited in the belief that he is more brilliant, more capable, and more important than ordinary men. No goal is too high for him, no task too hard. MacDougall (18) describes this state as follows: "In the exalted phase the patient displays an attitude of lofty superiority, an exaggerated belief in his own capacities; there is nothing he cannot achieve, he feels and therefore believes that mentally and physically he is a superman. His excitement is an excitement of a peculiar kind; it is not specifically amorous, or fearful or curious, or altruistic; it is the excitement of an intensified self-assertion, unbalanced, unchecked by any effective self-criticism or by deference to any other person." (p. 356) Schilder (20), who has a radically different conception of the nature of this illness agrees with MacDougall, and indeed with all writers on the subject in this point. He states that ". . . the manic is satisfied with himself. He has put himself in the place of his superego." (p. 139) Disregarding several other important features of manic behavior, some of which seem to contradict the above, it can be assumed safely that the manic patient expresses an unusual amount of self-confidence and belief in his superiority over other men. This is a statement which can easily be put to a test in the level of aspiration situation. Our question is: will the manic patient really attempt more difficult tasks than normal subjects? Will he display an unusual amount of enjoyment of his successes? What will he do when placed in a failure situation of which there is no escape, at least on the plane of reality? Are his criteria of what constitutes success or failure the same as ours?

In regard to self-esteem, at least, the depressed patient deviates from the normal in the opposite direction from the manic. He feels himself weak and helpless. He thinks that he cannot work or enjoy himself; that whatever he undertakes is doomed to failure before he starts; he believes that he has lost the proper use of his

mind and body, etc. From this symptomatology we should again expect a very definite reaction in the level of aspiration situation. Depressed patients, if their actions agreed with the description of their general feeling state and mode of expression, should attempt only very easy tasks. They should expect failure from the outset, and they should be incapable of enjoying success.

In measuring the level of aspiration behavior of manic-depressive patients, however, we hope to do more than merely ascertain whether or not their actual behavior agrees with the psychiatric interpretation of their state of feeling. It is only comparatively recently that psychiatrists and psychologists have become interested in a psychological analysis of mental disease. Formerly statements as, for instance, that schizophrenia is transmitted by hereditary predispositions, or that general paresis is caused by a deterioration of the brain were accepted as explanations, the "psychological correlates" of which only needed to be registered and classified. It has been increasingly stressed in recent years that an independent analysis of the psychological processes accompanying physiological changes is needed. In the case of the manic-depressive psychoses the situation is complicated by the fact that some of the most reputable psychiatrists consider it esentially a constitutional predisposition of the personality while other equally reputable psychiatrists and psychologists regard it as a functional disorder.

It may be of value to outline the most important hypotheses which have been advanced as psychological explanations of the manic-depressive psychoses. One of the earliest among these is the Freudian theory of mental disease in terms of libidinal regressions. When an unusual difficulty arises in the life of a person it is likely to stop the normal progressive development of generalized sexual adjustment. The flow of the libido is stopped and it now regresses to a previous level of adjustment. Roughly speaking, the particular stage of libidinal development towards which the regression takes place determines the type of mental disease which the person will develop. In the case of the manic-depressive psychosis, the libido regresses to the anal stage. In regard to the specific symptoms, Freud offers the following interpretation. In the depressive stage the individual is reacting to disappointment or hostility from his love object. The reaction is directed not towards the love object on the outside, but against the self. This turning inward of the aggression is made possible by the individual's partial identi-

fication with his love object. During the depression he turns against that part of himself which he has identified with the love object. In the manic state, the person can no longer endure the continuous self-punishment and instead of subjecting the ego to the demands of the super-ego, he puts the ego in place of the super-ego.

Schilder (20) recognized the weakness of this hypothesis especially in regard to the manic state. He modified the Freudian view somewhat, but still remained well within the framework of psychoanalytic thinking. He considers the manic state as a by-product of the solution of a conflict. "Perhaps the occurrence of a manic attack does not depend as much upon the nature of the conflict as it does upon the fact of the overcoming of the conflict, so that every unpleasant experience and event at first withdraws libido from the ego, depresses the individual until defensive powers are finally discovered. When these defensive powers break forth in an exaggerated measure, we have the picture of a mania." (p. 139)

MacDougall (18) advances a very different type of explanation. In his system of psychology, the psyche functions by virtue of a number of "sentiments" each of which are composed of several "instinctual tendencies." The manic-depressive psychosis he considers a disorder of the sentiment of "self-esteem" which is composed of the opposing instincts of self-assertion and submission. In the manic phase, the self-assertive tendency gains complete control while in the depressive phase the instinct of submissiveness controls all behavior.

Henderson and Gillespie (8) explain the mechanisms underlying the manic-depressive psychosis as follows. "The elation that is so prominent a symptom of manic states is to be regarded as the mood appropriate to the fulfillment of a wish . . . What makes the elation pathological is . . . that there is nothing in the external circumstances that apparently justifies the elation. The reason for the elation lies outside of consciousness . . . What happens is that from some very strong wish that has been repressed into unconsciousness the repression is at last partly removed and the patient feels and behaves as if the wish had been fulfilled . . . If, on the other hand, there has been a strong feeling of guilt associated with the wish . . . its fulfillment . . . is apt to lead to a depression . . ." (p. 121)

White (23) is the representative of a large group of psychiatrists interpreting the manic attack as a flight into reality. "Manic-

depressive psychosis is a type of extraversion reaction. That is, the patients, instead of turning within themselves try to escape their difficulties by a 'flight into reality.'[3] This flight into reality is the manic phase of the psychosis with its flight of ideas, distractability, and increased psychomotor activity . . . The great activity can be understood as a defense mechanism. The patient appears, by his constant activity, to be covering every possible avenue of approach which might by any possibility touch his sore point (complex) and so he rushes wildly from this possible source of danger to that . . . So in this sense the mania is an ambivalent reaction, rushing into reality on the one hand, but on the other developing, under the cloak of the hyperactivity and flight of ideas, a wish fulfilling drama in which the forbidden thoughts come to expression." (p. 159)

In surveying the literature on the subject, we were impressed with the extreme abstractness, the total absence of "co-ordinating definitions" in one and all of these hypotheses. Different theorists advanced contradictory statements regarding the nature of this illness, and the behavior of the patients is varied enough to supply all of them with suitable examples. We feel that many of the suggestions cited above may be of great value in understanding manic-depressive psychosis, but they need to be reformulated in more definite concepts and to be tested experimentally. The present study is meant to be a step in this direction.

Summary

An experimental study measuring the effect of success and failure upon the level of aspiration of manic-depressive patients is considered of interest because it should determine whether the patients' actual behavior corresponds to the ideas of self-elevation and self-abasement which they commonly express; because it may help to support or discard several of the hypotheses regarding the mechanisms underlying the manic-depressive psychosis, and because it is considered a step towards an experimentally supported independent psychological description of this illness.[4]

[3] The term "flight into reality" has been used extensively in psychiatric literature to denote a tendency to escape from inner conflicts by becoming greatly involved with outside things in an attempt to, as it were, "run away from oneself."

[4] We have not here discussed the numerous experiments comparing certain abilities and performances such as tapping, eidetic imagery, etc., in manic-

EXPERIMENTAL PROCEDURES

Special Characteristics of Our Approach

The procedure employed in this study, as well as the type of interpretation and analysis offered, is sufficiently different from most research projects to warrant a discussion of our reasons for these deviations. As far as we know, our study represents the first attempt to measure the level of aspiration in psychotic subjects. No techniques for dealing with the specific difficulties which arise from working with abnormal subjects have as yet been developed.

It is the purpose of this study to develop a method of measuring the level of aspiration in psychotic subjects, and to develop methods for both the qualitative and the quantitative analysis of the results of such measurements. In recent years it has been increasingly stressed that elaborate statistical studies are of little value unless we have a qualitative understanding of the nature of the psychological events under investigation. This study is an attempt to furnish the basis for a more comprehensive study of the differences between manic and depressed patients in regard to their behavior in the level of aspiration situation. It is for this reason that we have emphasized the understanding of the experiment in relationship to other parts of the subject's environment and to the state of the person. The statistical findings were used only as a secondary support for the qualitative results.

It will be necessary to follow up the qualitative analysis of relatively few cases with a study of a sufficiently large number to make the results quantitatively reliable. Unfortunately the number of patients available at the time was not sufficient to carry out this second necessary step. We may emphasize from the beginning that our statistical findings, which on the whole support the qualitative analysis, are based on a far too small number of subjects. They serve only to establish a method and should be followed up by a more extensive study.

The Subjects

For our experimental group we used patients from the Psychopathic Hospital at Iowa City, and from Mount Pleasant State Hospital, Mt. Pleasant, Iowa. Our normal subjects were thirty-three

depressive patients. We feel that such studies as were carried out by Studman (21) and Levy and Beck (14) are a part of the psychological description of the illness. They do not, however, directly relate to our problem.

college students at the State University of Iowa who volunteered to co-operate in the experiment. The socio-economic level of the experimental group is considerably lower than that of the control group, but we do not feel that this factor has any appreciable bearing upon the problem at hand.

On the whole we tested forty psychotic subjects, sixteen of whom had been diagnosed as manic-depressive psychosis, manic type, and twenty-four of whom had been diagnosed as manic-depressive psychosis, depressed type, or (in two instances) reactive depression. Because in some cases the diagnosis had been made months or even years before the time of the experiment, and because in many cases additional factors such as senility or alcoholism complicated the picture, we divided our subjects into three groups: "good," "fair" and "doubtful" cases. Eight of the manics and eighteen of the depressives fall into the category of "good" subjects. Our statistical results are based on these cases only, while the qualitative analysis made use of the material obtained in all of the experiments.

Description of the Maze Experiment

Apparatus.— The materials used in this experiment were four series of paper and pencil mazes which were worked out by the writer, following closely the pattern developed by Jucknat (11). Each series consisted of fifteen mazes, ranging from very easy to very complex designs. The increase in complexity was emphasized by an increase in the size of the mazes (see Figure 1). Two series of mazes had solutions, while the other two appeared to be solvable but in reality were unsolvable.

Procedure.— Whenever possible, the subjects were approached in the wards a few days prior to the experiment, in order to decrease the possible influence of the presence of a strange person. Before the beginning of the experiment proper, and at various times during the experiment, a natural conversation was carried on with the subject about extraneous matters, such as the weather, the temperature of the room, etc. This was done in order to loosen up the situation and make the subject feel free and as little self-conscious as possible.

The experimental room was arranged as diagrammed in Figure 2. When the subject entered the room, the observers 1 and 2 were already stationed at the places indicated in the drawing, and the subject asked to sit down opposite the experimenter. He was at

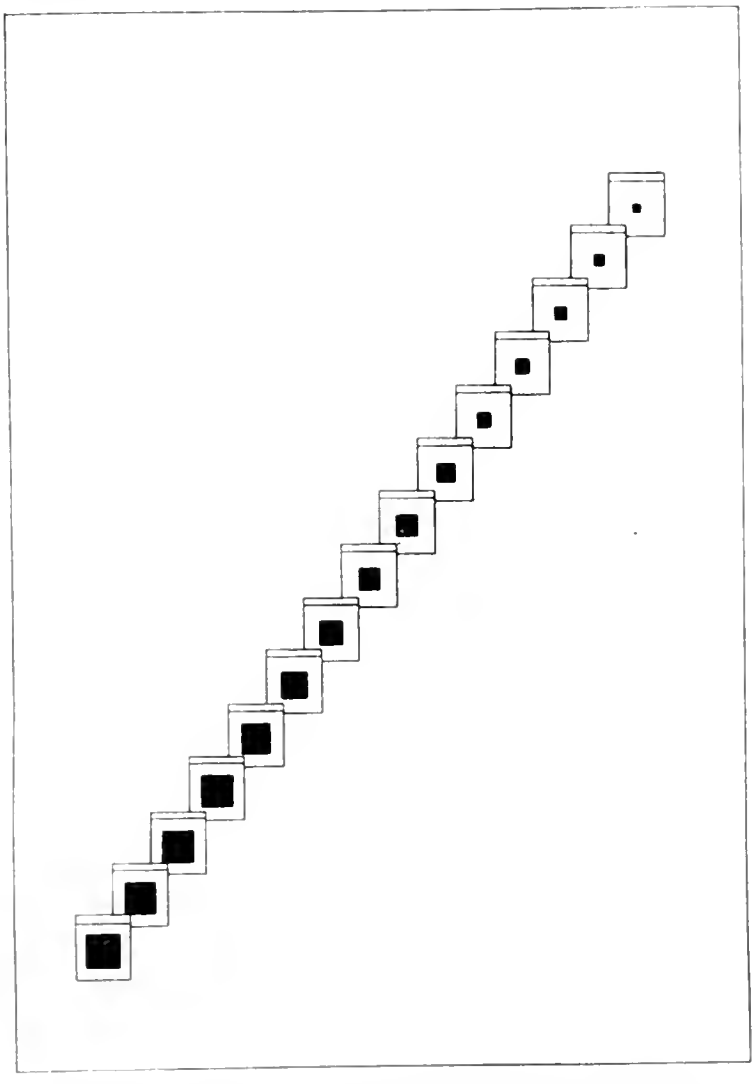


Figure 1. The Arrangement of the Two Series of Mazes on the Experimental Table in the Order of Difficulty, With Two Mazes for Each Level of Difficulty

first given a trial maze, that is, a maze which was constructed as those used in the experiment but was not a part of any one of the series. The task was explained to the subject and he was given a chance to familiarize himself with it until it was felt that the nature of the task had been entirely understood. He was then asked to accompany the experimenter to the table where two series of mazes were arranged in a ladderlike fashion in the order of their difficulty. Two mazes of corresponding difficulty were put on top of each other in such a way that the underneath maze was still visible. The instruction was as follows:

"Here you see a whole lot of mazes just like the one you did already. But you can see these are of different sizes. Down here are the small ones and as you go up the line they get bigger and

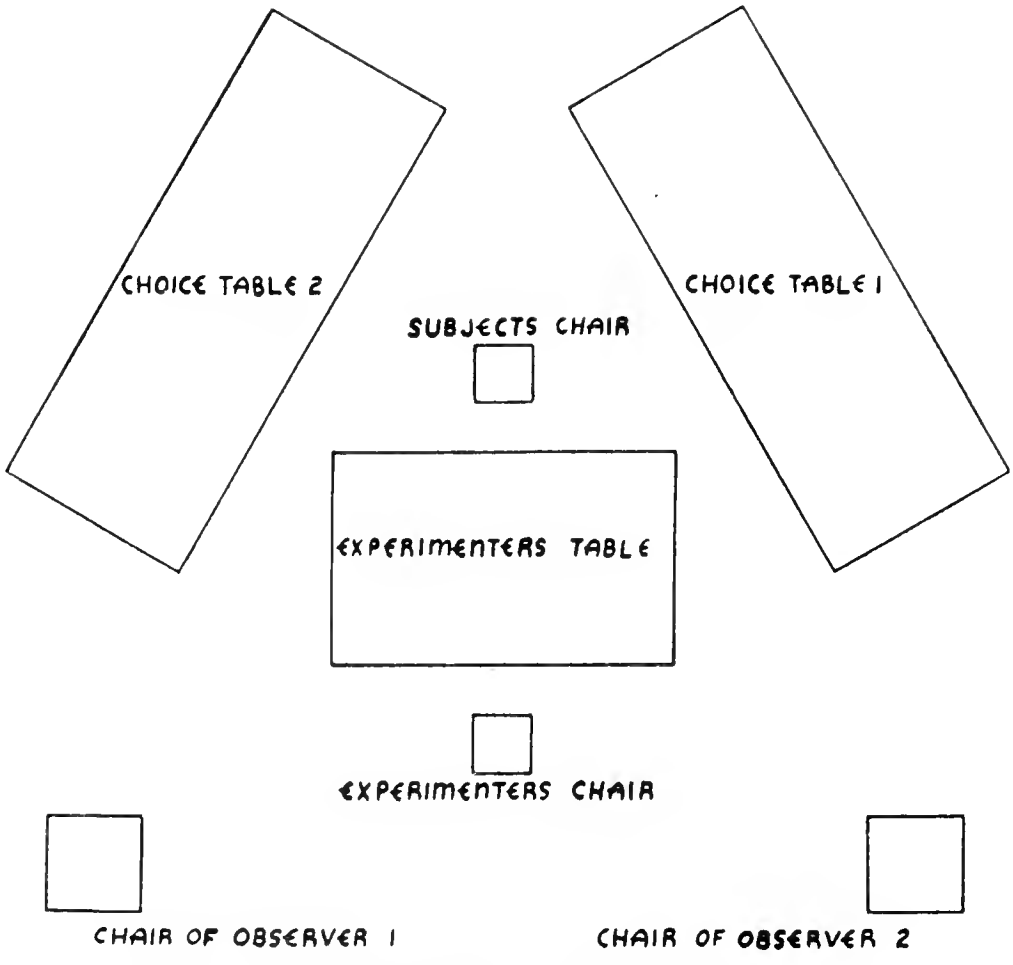


Figure 2. The Arrangement of the Experimental Room

bigger. The small ones down here are the easy ones, and as you go up the line they get more and more difficult; the big one up there is the very hardest one to do. On these mazes there is a time limit, and I shall always tell you whether you did it on time or not. Now I want you to pick one of the mazes, any one you feel you would like to try. It does not make any difference to me which one you take." After this part of the instruction has been understood it continues: "You can see there is always one maze on top of the other. Now the underneath maze is of the same difficulty as the top one, but it is not the same maze. If you have taken one maze, and then you want to try another one but you do not want it to be any easier or any harder than the one you did already, then you can take the one underneath." These instructions were repeated and varied until they had been thoroughly understood before the subject was asked: "Now, please take the maze you want and bring it over there to the table." The subject then started to work at a signal given by the experimenter.

After having finished one maze the subject was asked: "Would you like to stop now, or would you like to try another one?" The experimenter was careful never to influence the subject's decision, and when asked whether he would like the subject to go on, he replied, "I like you to do whatever you would rather do."

Whether the subject experienced success or failure in any given series was experimentally controlled in the following manner: If the subject was to experience success he was allowed to find the solution and as soon as he had reached it the experimenter emphatically stopped the stopwatch, looked at it and made a remark like, "You did that on time," or "That was very good time you made," etc. In case of failure the experimenter interrupted the work at a time when he felt that the subject was about to discover that the mazes were unsolvable or that the subject was about to give up hope. He stopped with an impersonal remark like, "I am sorry your time is up," or "You did not quite make it this time." The group of A subjects were given first the success series and then the failure series, while the order was reversed in the group of B subjects.

After completion of the experiment we obtained introspections from the subjects whenever possible. All subjects were asked very similar questions, though not in the same order or worded in the same way. The main topics covered were the subject's reason for each of his choices, what his feelings had been at the experience of failure and success, which series of mazes he had liked best and why, and whether he liked tasks of this nature in general.

Aside from a running account of all happenings throughout the experiment the following data were obtained:

1. The subject's actual choice (level of aspiration)
2. The tasks which were taken into consideration by looking at them during the choice (fluctuation)
3. The duration of choice
4. The intensity of each experience of success or failure as judged by the observers
5. The duration of performance
6. The number of words spoken by the subject while working on the tasks and during intervals
7. The content of the subject's speech or a verbatim record
8. The number of seconds which elapsed between the last word of a question from the experimenter and the first word of an answer by the subject

Immediately after the experiment, and before it had been dis-

cussed among them, both observers and the experimenter wrote an account of the entire experiment as they remembered it. This account covered the subject's general behavior, his attitude to the tasks and towards the experimenter, any changes observable in him during the course of the experiment, suggestions as to the reasons for certain behaviors on the part of the subject, etc. These writings were found invaluable at a later time, when we attempted to reconstruct each experiment as completely as possible.

Description of the Peg Board Experiment (Test of Optimism)

The difference between manics and depressives might not only be a matter of their reaction to success and failure, but also a matter of which performances are regarded as successes and which as failures. One and the same achievement, even in one and the same relationship to the level of aspiration which the subject had for a particular task, may yet be considered a success by the manics, for instance, and a failure by the depressives. For this reason we devised a test which may be considered a measurement of the subject's "optimism" in regard to his own achievements, that is, a test which is to show the amount of achievement or non-achievement sufficient to create the feeling of success or failure for the different groups of subjects.

Apparatus.— The apparatus consisted of twelve peg boards, varying from very small to rather large boards. The smallest had nine holes and the largest seventy-five holes. These boards were filled with pegs which were available in three different colors, red, white, and black.

Procedure.— The preliminary contacts with the subjects and the methods of recording were essentially the same in this experiment as in the one with the mazes. The subject was first allowed to familiarize himself with the task, for which purpose we used a peg board of slightly different design and color than the experimental boards. On this first trial board the subject was always allowed to succeed, though no special praise or encouragement was given. The instruction was much the same as for the mazes, except that it was pointed out to the subject that he would be given several different patterns in which to put the pegs into the holes. After the subject selected the first board he was told that he would be given three trials on each board.

The experiment consisted of four different series of tasks:[5]

Series A: To fill the board as fast as possible, paying no attention to the colors. The subject is made to experience on

First trial	Failure
Second trial	Success
Third trial	Failure

Series B: To fill the board as fast as possible, alternating red, white, and black rows of pegs

First trial	Success
Second trial	Success
Third trial	Success

Series C: To fill the board as fast as possible, alternating two pegs of each color along the horizontal rows of the boards

First trial	Success
Second trial	Failure
Third trial	Success

Series D: To fill the board as fast as possible, filling the diagonal rows only with one peg of each color in a given order

First trial	Failure
Second trial	Failure
Third trial	Failure

Success and failure were again experimentally produced by timing. If the subject was to experience success he was allowed to fill the board and told that he did it in time. If he was to experience failure, he was interrupted and told that his time was over. This was accepted in all cases by both patients and normal subjects who never suspected that their failure or success might not be due to their own efforts.

For the subject the three trials on one board had the character of one action directed towards one goal. In all of the four series

[5] Throughout the paper we shall use the following terms to indicate the different parts of the test situation:

Trial = One trial on a peg board consists in filling all the pegs in once. The subject is required to do three trials on each board he selects.

Task = Three trials on the same board constitute one task complete. The subject may choose as many tasks as he likes. Two successive choices of the same board count as two tasks.

Series of tasks = A series of tasks consists of all the choices the subject makes on the peg boards for the same type of pattern (and therefore the same degree of achievement). The subject's choices on A, B, C, and D constitute a series of tasks each.

In this manner it is possible to distinguish between the level of achievement and the completeness of achievement. The former depends upon the difficulty of the task chosen; the latter upon the proportion of achievement and non achievement respectively which the subject experiences within each task.

of tasks (A to D) this goal was the same — success on the tasks. This goal was most fully reached in the series B (success-success-success) and least attainable in D (failure-failure-failure). A subject might raise his level of aspiration (i. e., take a more difficult task) only after complete achievement (series B) whereas a more optimistic person might do so even after less complete achievement (success-failure-success = series C) or even after as meager a proportion of success as is given in series A (failure-success-failure).

Variations of Technique During the Experiment

When this study was begun we did not know which methods were best adapted for the work with psychotics, nor did we have the recording technique completely developed. The essential data, to be sure, were taken in the same manner with all subjects, but some of the refinements which turned out to be of great significance for the interpretation of our data were introduced only during the experimental period. For instance, for the first thirty-five subjects we did not count the actual number of words spoken by the subject, but rated all subjects on a five-point scale for talkativeness. Similarly, at the beginning of the work we recorded the duration of choice for all subjects, but the seconds which elapsed between a question from the experimenter and the answer from the subject was not recorded. These changes undoubtedly still lower the reliability of statistical findings, as they reduce the number of instances for each item. At the same time we are convinced that they have increased the validity of the study as a whole, in that the recording method which was finally arrived at stresses the items which are of significance in differentiating the manic from the depressive group of subjects.

THE QUALITATIVE ANALYSIS

Principles of Qualitative Analysis

By the term qualitative analysis is meant the attempt to understand the structural and dynamic conditions which underlie the psychological processes observed during the experiment. It is felt that a topological description of a situation, even if we are unable to derive the laws governing a certain behavior or to point out the causes of the same, is in itself a step towards the explanation of the problem which underlies the situation thus described.

According to topological psychology, all behavior (B) is a func-

tion of the interaction between the "psychological person" (P) and the "psychological environment" (E) (B = F(P,E)). In order to understand any given situation it is necessary to take into account, as far as possible, the structure and momentary state of the person as well as those factors in his environment which influence the person's behavior at a given time. Such a representation of a person's "life space" would include not only such factors as his goals and needs, his ambitions and fears, his relationship to other people, etc., but also items as whether he is a person who can be easily influenced by the outside and modify his attitudes or whether he is rigid in this respect, or whether he is a person for whom it is difficult to arrive at decisions, or one for whom it is easy, etc.

We have tried to understand each individual experiment and case history as a whole, rather than to look only for common factors among the different subjects.

Whenever a new concept or manner of representation is introduced during the qualitative analysis, it will be discussed and defined at that place. We should like to emphasize at the beginning, however, that all the figures used in the discussion are mathematical representations of psychological hypotheses rather than mere "pictures" or diagrams designed to make the points under discussion more concrete.[6]

Qualitative Differences in Behavior Related Primarily to Differences in the State and Structure of the Person

Following is a description of the behavior which the different types of subjects showed during the experiment.

Hypomanic

From a psychiatric point of view there is no necessity to distinguish the hypomanic group of patients from the group of acutely excited manics. The difference is considered one of degree, not kind. The overt behavior and probably the state of the person, however, are sufficiently different to warrant a separate discussion.

A patient is diagnosed as hypomanic if there exists a definite increase in psychomotor activity, a slight euphoria and irritability. The person is always in perfectly good contact with his environment. He is able to perceive a goal and to retain a goal-idea over

[6] For a complete discussion of the methods of topological psychology see Kurt Lewin (16, 17).

quite as long a period as a normal person. The main difference between the behavior of the hypomanic and that of a normal person is that in the hypomanic subject the sensitivity to outside stimuli is much greater. They laugh easily, their anger is easily aroused, and they are rather distractable. Their associations are loose and often very superficial.

If we conceive the person as a dynamic whole represented topologically as a region with various subregions, this major difference between normals and hypomanics is represented in Figure 3 (A and B). For the purpose of this discussion it will suffice to consider the psychological person as consisting of two parts, the inner personal systems and the "motoric sensoric."

By the inner personal systems we mean systems corresponding to the needs, the specific desires and fears of the person. The motoric, surrounding the inner personal systems, is equivalent to what Koffka (13) calls the "executive." It includes the functions of movement, perception, and thinking. All communications between the person and his environment take place through the motoric-sensoric. A person's responses to an environmental stimulus are generally based upon his perceiving it; he cannot react to it without using his motoric as a channel between the inner personal systems and the environment. Ordinarily, the motoric is ruled to some extent by the inner personal systems in that it expresses the needs of the person by way of action or language. It is also ruled by the person's environment in that it is the vehicle of perception of any environmental change whether it be a startling noise or a promotion from one social status to another. In the hypomanic person two changes have occurred in regard to the function of the motoric.

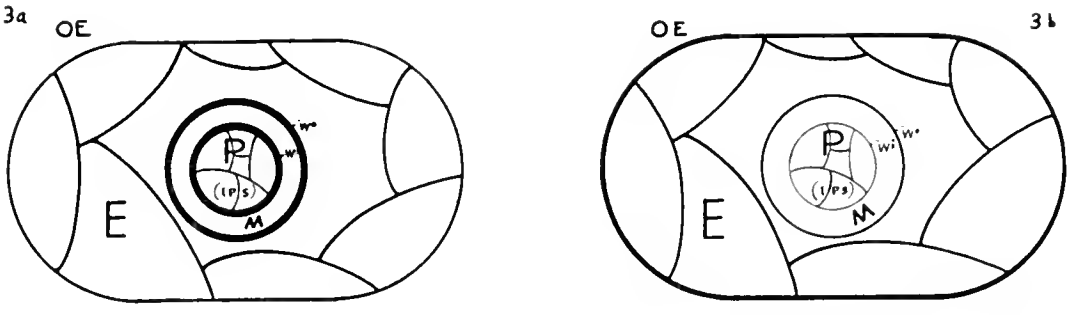
> 1. The motoric-sensoric reacts relatively stronger to weaker stimuli. One might say the functional threshold is lower than that of a normal person. This change operates in both directions, that is, the motoric reacts more strongly to internal and external stimuli.
>
> 2. In the hypomanic the motoric-sensoric is ruled more by the inner personal systems and relatively less by the alien, so-called objective factors in the environment. That is, the person behaves according to his own needs rather than according to the nature of the environmental situation.[7]

[7] An objection might be raised that the hypomanic person does not react inappropriately to his own environment, but rather his psychological environment is changed according to his own needs, and the response is therefore,

To a certain extent this is true of all persons. One and the same "objective" stimulus or environment calls forth different reactions from different persons because each person's "interpretation" of the outside stimuli depends at least in part upon his momentary mental content. Ample evidence for this statement is given by the work of Rorschach (19) and Beck (1) on the Rorschach test and numerous other experimental studies.

The difference between a normal person and a hypomanic is that the latter is more likely to interpret his environment in accordance with his own needs; in other words, he is too irrealistic. Both these differences in regard to the ease of communication between the motoric-sensoric and the inner personal systems and environment as well as in regard to the degree of "realism" are represented in Figure 3.

In the experimental situation, the hypomanic usually behaves very boastfully. He treats the experimenter as a well-meaning hospital employee of little importance and stresses his readiness to "try anything." He, characteristically, begins to work on the test before having understood the directions. In two cases he began



Normal Hypomanic

Figure 3. Differences in Psychological Structure Between the Normal Subject and the Hypomanic

In the hypomanic the motoric (M) reacts strongly to relatively weak stimuli, as indicated by the lack of rigidity of the inner and outer walls (W^1, W^o) as compared to those of the normal. The motoric-sensoric of the hypomanic is also influenced more readily by the inner personal systems (IPS) (via W^1) than by more objective environmental features (via W^o) as noted by the differences in rigidity of the two walls. A third dynamic factor related to these two is that, as compared to the normal, the state of the inner personal systems in the manic influences the psychological environment (E) more, and the conditions of the objective environment (OE) less, as indicated by the rigidity of the walls through which these influences have to communicate. (In order to represent properly the relationship between E and OE a third dimension is needed; 16.)

psychologically speaking, quite adequate. To our thinking these are but different ways of saying the same thing. For technical reasons we prefer the formulation given in the text.

to point out the shortcomings of the test before he ever tried to work it. Comments as, "It seems rather silly to me," or "I don't know what good *that's* going to do me," are quite frequent. The rapport with the experimenter is very good in all cases; the subject feels at ease and stands above the situation rather than under any social pressure.

All but one of our hypomanic subjects began with the most difficult task. This did not require any special decision, but these subjects seemed to feel that they naturally and according to all probability ought to succeed with the hardest task. Often the choice is accompanied by a remark such as, "Sure, give me the hardest one," or "I'll take the big one, of course."

If the first performance was successful, none of these subjects showed any real elation or experience of success, but they rather lost interest in the task. If it was unsuccessful, however, the picture changed considerably. Only one of our subjects frankly recognized his failure in this situation by saying, "I guess I tried to hurry too much," and even he said to the experimenter, when the experimenter happened to visit the ward the next day, "Why don't you give me any hard tests? The ones you have are all too easy for me." The other subjects in this group ordinarily try to rationalize by blaming the pegs, a headache, or even "electricity in my fingers" for their failures. In almost all cases, they shift their level of aspiration from a very high to a very low one, the easiest or second easiest, after only one experience of failure. That is, they show no resistance to failure, no effort to stick to the standards which they first erected for themselves. In no case did a hypomanic subject make more than two choices on a series, irrespective of whether it was a success or a failure series. In the first case, they showed all the signs of satiation;[8] in the other they apparently feared that repeated failure would lower their artfully maintained self-esteem.

In summary we may say that the hypomanic subject does not become very deeply involved in the experimental situation. He be-

[8] See Karsten (12). Interestingly enough, our finding that the hypomanic who is on the whole more sensitive becomes more easily satiated is in entire agreement with Karsten's result which states that satiation occurs more quickly in central regions than in peripheral ones. For a person in whom the inner personal system is abnormally accessible, i. e., events in the environment can reach the inner personal system more readily, as is the case in hypomanics and also in the more excitable type of problem child which Karsten mentions in her discussion, the task region is necessarily more central and therefore more easily satiated.

gins with a rather high task, but lowers his level of aspiration after the first experience of failure. He takes only few choices and becomes easily bored with the tasks.

The Excited Manic

The manic subjects, contrary to what one might expect, frequently hesitated to accompany the experimenter to the experimental room. One patient (No. 29), for instance, was found laughing and talking to herself in an apparently happy manner. When the experimenter approached her she clung to the nurse and actively resisted any contact with the experimenter. Upon leaving the ward, she said, "I know what it is, it's a surprise. My husband is dead." This was said with every indication of fear. Again, upon entering the experimental room, the patient looked apprehensively from one observer to the other, asking, "Are you going to kill me? You aren't going to kill me, are you?" In spite of these indications of fear, the subject was clearly elated. She first chose high tasks, talked in a rambling manner about funny incidents in her past life, made a number of puns and rather good jokes about the experimenter, got up from her chair in order to dance around the room, and laughed frequently.

In other subjects, the hesitation to take part in the experiment expressed itself in the form of aggressiveness rather than fear. One subject (No. 71) agreed to leave the ward with the experimenter only after she had been assured that she would not be made a fool of, that she would be treated with the respect due to a person of her intelligence, and that she would be allowed to return to the ward whenever she pleased.

The behavior of the manic subjects during the experiment proper was by no means uniform. The most outstanding characteristic of their behavior consisted in a great lability and variability. They reacted to the experimental situation as a whole, and the tasks, their successes or failures with the tasks were only part of the total situation, not necessarily more important than the color of the experimenter's dress. One reason for the lack of homogeneity in the behavior of this group of subjects, it would seem, lies in the fact that they are unable to direct their activities by a goal-idea for any length of time. The normal person and most of the depressive patients can consider one idea, such as to succeed at least in one of the tasks, or to please the experimenter, as the most important one in a certain situation. Their reactions to the momentary events are

subordinated to this idea and modified by it.[9] A really excited manic is incapable of such an integration of his different actions. Each event and each goal are of nearly equal importance so that the subject, while working on one task, may first really wish to finish it within the time; a second later he will try to determine what initials the paths of the maze stand for; a little later he may wish to imitate a noise he hears on the street, and it is only with difficulty that the first goal can be brought to his attention again. The nature of this state will be discussed in greater length at a later time. For our present purpose, it will suffice to point out one more characteristically manic reaction in the level of aspiration situation.

All our manic patients gave every evidence that they were absurdly afraid of failure. When they felt that they could not accomplish a task, as was frequently the case, they often refused to even attempt it. This was usually done not by a flat refusal, but by beginning another activity with the same material. Thus, one subject began to play that the pegs were pigmies who were fighting a war against the whites; another subject played that he was throwing the boards at the experimenter, and yet another one busily engaged herself in drawing animals on the mazes. When the manic subjects encountered failure they most frequently attempted not to realize it as such. They rationalized or tried to divert the experimenter's attention from their performance. In some cases, they even behaved as if they had experienced success. Thus, subject No. 70 who after failure refused to make another choice said, "They are too easy for me."

In regard to the topological representation of the state of the person, the changes are much the same as described for the hypomanic subjects. The wall between the motoric and the environment is weaker, that is, the person reacts more readily to outside stimuli, and the wall between the inner personal system and the motoric is weaker, that is, the person more readily expresses his every thought and impulse. The element of fear which is such a prominent part of the manic reaction, and yet conspicuously absent in the hypomanic, in the experimental situation may also be re-

[9] In a recent investigation, this integration of different activities in a hierarchy of goals, where one goal dominates but several subgoals exist, was found to be of fundamental importance for constructiveness in play. The absence of such a goal structure denoted, to these workers, a more primitive or immature stage of development. (Lewin, Kurt, Dembo, Tamara, and Barker, Roger: Experiments in Frustration and Regression in Children. Unpublished study)

lated to this heightened sensitivity. The manic patient reacts differentially to the different parts of his environment, and it is only logical to expect that he is especially sensitive to being hurt, i. e., to the possibility of failure. It is of greater significance yet that during the full-fledged manic attack the motoric is ruled by the inner personal system rather than by the environment to a much higher degree than is the case in hypomanics. The manic patient reacts only to those outside stimuli which are in acordance with his momentary needs and wishes. Thus, we have often found that a manic subject will pay no attention whatsoever to our efforts to make him do the tasks, while he showed a considerable response to much less conspicuous elements in the situation, for instance, the sound of a car driving past the building.

In summary, the behavior of excited manic patients in the experimental situation is variable, labile, and unpredictable. The subjects always understand the instructions but often fail to comply with them for fear of failure or because they do not wish to exert themselves. Aggressiveness and fear-reactions are frequently found side by side with exultation. The subject's responses are determined by his momentary needs and wishes much more than by the "objective" factors in the environment.

The Depressives

At first sight it appeared quite impossible to discover any uniform trends in the behavior of the depressed subjects. Some seemed disinterested and apathetic, others reacted too strongly to every element of the situation; some were overtalkative, and others almost mute; some took rather difficult tasks, and others very easy ones. It became quite evident that these cases, all of which belong in one group psychiatrically speaking, represent a variety of different psychological states. In order to bring meaning into the chaos of almost contradictory data, the depressed subjects were divided into five subgroups, which will be described in the following paragraphs.

Motor Retarded Depressives.—One of the most outstanding symptoms of a manic-depressive depression is what is commonly referred to as a psychomotor retardation. By this, the psychiatrists understand a slowing down of all functions of body and mind. According to our observations, this retardation can be of two types indicating two radically different psychological states.

The group of subjects who are classified as motor retarded react

to the experimental situation somewhat as follows: the subject does not offer any resistance to being brought to the experimental room, nor does he exhibit much interest in either the experimenter or the tasks. His face wears a sad and careworn expression and is almost immobile. All movements are slowed down, and the subject seems to experience difficulty in thinking. He talks, if at all, in a low voice and in as few words as possible. The subject co-operates from a sense of duty rather than from interest. His choices and his whole behavior are apparently ruled by a strong sense of what he ought to do, of what is expected of him. Thus when asked why they made several choices, in spite of their obvious distaste for the activity, several of these subjects answered, "You have to keep on trying." In this group the subjects do not experience any special difficulty in arriving at decisions, they usually know what they want to do, but the execution of each and every action is very slow. The performance is usually smooth and of uniform speed, in contrast to the type of depression to be described next.

Decision Retarded Subjects.— It is our contention that in the group of subjects to be described next it is not the motor retardation which accounts for the person's slow and ineffective performance, but a difficulty which might be described as a decision retardation. For these subjects every little decision, e. g., whether or not to comply with the instruction and sit down in a chair, which pegs to grasp, whether and how to answer any questions that the experimenter might ask — all of these become major conflicts and it takes a long time for the subject to arrive at a decision. When they do know what they want to do, however, the performance is of normal speed. Thus, it characteristically takes a long time (in extreme cases as long as three to four minutes) until the subject even begins to answer a question, but once he opens his mouth for the answer the words come at normal speed or even accelerated in an almost explosive fashion.[10] Similarly, it may take the subject minutes to decide which path to follow on the maze, but the process of drawing the line is accomplished at normal speed. Thus, these subjects behave in a halting, jerky, and irregular fashion. In extreme cases the situation becomes complicated by the fact that for these subjects there arise decision situations where there would be none

[10] In psychiatric literature this is referred to as "blocking." We have found no reference, however, to exactly the same phenomenon on the plane of action.

for the normal person. Every action, such as rising from a chair and getting a board from another table, seems to be subdivided into a great number of subactions, such as rising, turning around, starting to walk, stretching out a hand to reach for the board, grasping it, etc., each of which requires a new decision. It is for this reason that in severe cases a decision retardation may look almost like a motor retardation. In both, performance is slow but in the first case it is uneven and jerky while in the second case it is uniform and smooth.

The attitude of the decision retarded subjects toward the experiment is very different from that of the motor retarded ones. They are always tense and sometimes very negativistic. They are deeply concerned about the meaning of the experiment and frequently ask, "What is it for?." "What is it going to do to me?" It is very important for them which board they choose and what the experimenter may think of their performance. They often cry or wring their hands in a tense manner. From their whole behavior it is evident that the decision situation is most unpleasant to them. They try to avoid it by asking the nurse or the experimenter for directions in regard to their every move. In all but one case the experiment was felt as an unpleasant field and they did not make a single choice above the required number. (In two cases, the experiment had to be interrupted because the subject would not even do the one required choice on each series.)

The Major Decision Retarded Groups.— In some subjects it was observed that some decisions were abnormally difficult for them while others were accomplished at normal speed. The particular decisions with which these subjects experienced difficulties were found to be the ones which were of outstanding importance in the experimental situation. Thus, the subject might have a hard time to decide which board to take, but would take the board, bring it to the table, and start working at it without any difficulty.

Motor and Decision Retarded Groups.— Some depressed patients gave evidence of being retarded in regard to both the motoric and the decision region. All subjects who needed a decision time significantly longer than average, and whose performance was slow and irregular, were classified in this group.[11]

[11] See page 250 for discussion of statistical differentiation between the various types of retardation.

The Nonretarded Depressives.— There was one rather large group of depressed subjects who did not show any evidence of either decision or motor retardation. The only thing that differentiated them from the normal subject was their mental content, that is, their ideas of unworthiness and depressed mood. These subjects usually tried to comply with the instructions and oblige the experimenter, but not to become involved in the tasks. In almost all cases, however, the experience of failure upset their superficial poise, and they became quite concerned and interested in the task. A general tenseness and restlessness, sometimes amounting to real agitation, was frequently noticed in these subjects.

Qualitative Differences in Behavior Primarily Related to Differences in the Psychological Environment

The behavior of the subjects during the experiment was largely determined by what meaning the experiment had for them. The meaning of the experiment was never the same for any two subjects, as it depends upon a variety of factors most of which lie outside of our control. There were, however, some important general characteristics of the experimental situation which were found of importance for the behavior of whole groups of subjects.

The Experiment as a Pleasant Field

The experiment was experienced as a pleasant situation by a considerable number of subjects. Curiously enough, there was only one manic subject who, we felt, enjoyed the experimental situation, while there were quite a few depressives who enjoyed the attention and relief from the monotony of the hospital routine.

Example: Subject 41.— This subject was a twenty-eight-year-old woman, who is a patient at the Mount Pleasant State Hospital. She belongs in the motor and decision retarded group and was only moderately depressed at the time of the experiment. To her the experiment meant a welcome change from the every day routine of the Hospital. She was interested in the tasks rather than in the experimenter, though the rapport was good at all times. The most outstanding thing about this subject was her persistency. In both experiments she took almost as many tasks as were provided, and this regardless of whether she was experiencing failure or success. Her behavior, and every specific action, were ruled by two goals rather than one. The most important one was the goal which she had developed in regard to the experimental situation as a whole, namely to remain in this situation as long as possible (see Figure 4, pleasant. The second goal was the one appropriate to the level of aspiration situation, namely to do as well as possible on the tasks. Thus, if this subject continued to raise her level of aspiration after failure, as she

did, and did so cheerfully and almost undisturbed, it seemed as if she reacted abnormally to failure. In reality, however, the negative valence[12, 13] of further failures was smaller than the negative valence of discontinuing and going back to the ward (see Figure 4, unpleasant). In this subject, then, the whole level of aspiration behavior, the number of choices as well as the raisings and lowerings of the level of aspiration were colored and strongly modified by the fact that the experimental situation as a whole was a pleasant field for her.

The Experiment as an Unpleasant Field

A subject's responses in the level of aspiration situation may be modified in a similar manner, though in the opposite direction, in cases where the experimental region possesses a distinctly negative valence.

Example: Subject 57.— On the ward, this patient at first refused to accompany the experimenter to the experimental room. After some persuasion she came, but only after a nurse took her arm on the one side and the experimenter on the other, "helping" her to walk with considerable pressure. On the way the patient saw her physician, and she evidently desired an interview with him. Instead, the physician rather roughly told her not to be silly and to "take her test." This increased her negativistic attitude toward the experiment though she no longer actively resisted.

This patient belongs in the decision retarded group. She was practically mute and it was very difficult for her to force herself into at least partial compliance with the instructions. She selected one board and worked on it, apparently not because she wanted to succeed, but because she felt under strong social pressure to do it. She experienced objective success on the task, but positively refused to take another board. Here again, the discontinuation is to be ascribed not to her success, but to her strong emotional resistance to the experiment as a whole. In fact, it is incorrect to use the word success in this case, as the subject had no goal except to leave the experimental situation so that her achievement did not signify the reaching of a goal region (see Figure 5, p. 265).

The Experiment as a Means to an End

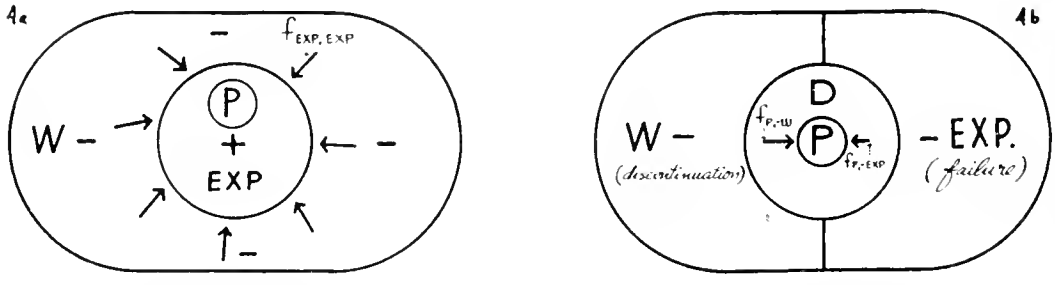
In an experimental investigation H. Wright (24) found that a goal object becomes more attractive by the fact that it is more difficult to reach. This was true, however, only in relation to goals and not in relation to means. When the subjects were confronted with the choice between an easy and a difficult way (means) of reaching the same goal they preferred the easier activity. In other words,

[12] The term valence is used in topological and vector psychology to denote the presence of a psychological force driving the person towards or away from a region which possesses a positive or negative valence for a particular person at a particular time.

[13] For detailed discussion see Lewin (17).

the tendency to raise the level of aspiration and in this way, so to say, to act against the principle of parsimony seemed to exist only in relation to ends, whereas in relation to means the principle of parsimony seemed to hold true. According to our observations this statement cannot be accepted without qualifications.

An analysis of all the level of aspiration situations which have been experimentally utilized shows that in a certain sense the level of aspiration is always formed in relation to a means. Ordinarily the positive valence of success on a high level of difficulty is not due to the pleasure intrinsic to performing the task, but it is due



Pleasant Field Unpleasant Field

Figure 4. The Experiment as a Pleasant Field and as an Unpleasant Field
Before any experience of failure by Subject 41 the experiment (EXP) was predominantly a "pleasant field" which she was loath to leave by returning to the disliked ward (W).
After failure, however, (Unpleasant field) two forces were important as she stood in the decision region (D) between continuing the experiment (EXP) or returning to the ward (W). One was the strong aversion to failure ($f_{p,-exp}$), and the other was the inclination against discontinuing the experiment because it would mean returning to the ward ($f_{p,-w}$).

to what this achievement represents in terms of social status. We are pleased at being able to solve a difficult puzzle not only because it was fun to do it, but because this achievement classifies us as "intelligent people." In this sense, achieving the task is a means toward the goal of "increased social status" or "being considered an intelligent person." On the other hand, there undoubtedly are cases in which no level of aspiration is formed because of the means-character of the task. A concrete example will illustrate what we consider to be the important difference.

Subject 42 is a hypomanic patient residing at one of the Iowa state hospitals. In this particular hospital patients are called to the administration building, where the experiments were conducted, almost only in connection with parole plans. He therefore considered the experiment a test which would, at least in part, determine whether or not he was fit to live on the outside. Thus, it became definitely a means toward the end of getting out of the hospital. It

so happened that in both the maze and the optimism experiment the subject first formed a level of aspiration in relation to the tasks and then suddenly gave it up, but for a different reason in each case. The underlying cause can be understood only by a closer analysis of the two situations.

In the peg board experiment, the subject started out by taking the highest possible task, apparently under the impression that he could succeed in it. When he met with failure his conception of his own abilities changed radically and he chose the easiest possible task. When he encountered the same amount of failure again he suddenly lost all interest in the tasks. He did not seem to care which ones he took and only very little whether or not he succeeded. Instead, he began to daydream about his home. He talked of corn husking contests, of winter evenings around the fire, etc. (Incidentally, his description was an enormous falsification of a rather horrible home situation.)

The topological representation of this situation is somewhat as follows (Figure 6, p. 229): On the level of reality, the subject considers the experiment a possible path towards "getting out of the hospital." It is thus included in the strongly positive region. Every success brings him closer to this dominant goal, as he thinks that success on the task represents fitness to leave the institution, and every failure increases the distance between him and his goal. Under continuous failure, therefore, the experimental situation assumes the character of a barrier and becomes negative. The subject then leaves the unpleasant reality level and enters the irreality region of "thinking of home." It is obvious that this is the irreal correlate to the reality region "getting out of the hospital." However, the experimental situation which is a part of the reality region and was at first viewed as a possible path to freedom has now become just another part of the hospital or even a barrier against freedom and as such is not at all a part of the irreality region. It is for this reason that the subject loses interest in the tasks and fails to develop a level of aspiration (see Figure 6).

In the maze experiment the situation was somewhat different. Success on the high mazes was again considered a path towards getting out of the hospital. However, when the subject experienced failure he expressed regret and displeasure, but continued to choose increasingly difficult mazes until he had done all the available tasks. He did this without any conflict and informed the experimenter that he was going to do all the tasks regardless of success or failure. Here again, he did not follow the laws of the level of aspiration, in fact it cannot be said that his choices represented a momentary level of aspiration as he did not have the goal of succeeding on each individual task, but the goal of "doing all the mazes."

The topological representation shows a situation quite different

from that in the peg board experiment. At first the subject wanted to reach his goal of "getting out of the hospital" by succeeding in the tasks. When he failed to do so, however, the way towards the goal region did not seem entirely blocked to him. If he could not succeed on the tasks he could at least demonstrate his good will by doing them all, stressing his willingness to do any work that might be offered to him. "I never lay off on a job." Thus, success on the tasks was only one of two possible means to his end, and this enabled the subject to perform the tasks without developing a level of aspiration for them and yet to remain on the level of reality (see Figure 7).

It is our conclusion from the above analysis as well as from many other cases that a level of aspiration is formed in relation to a means towards an end only if success on a level of greater difficulty is seen as a bigger step towards the goal than success on a lower level of difficulty.

THE QUANTITATIVE ANALYSIS

Principles of Quantitative Analysis

As was mentioned before, we do not consider our quantitative results conclusive or statistically reliable. We felt, however, that it was part of our task to develop methods of statistical evaluation which would differentiate between our different groups of subjects. In order to increase the validity of our findings, even if it be at the expense of reliability, we have used only what has previously been called "good" cases. This reduces the number of subjects to seven manics, seventeen depressives on the maze and peg board tests, and twenty normal subjects on the peg board experiment, and eighteen on the maze experiment.

In view of these facts we think that the agreement between the results on the maze and on the peg board experiment are even more striking than the figures would otherwise indicate. It will also be noted that the critical ratios between the manic and the depressive group of subjects is significant on several of the most important items as, e. g., the number of voluntary choices and the average size of step. On the whole, we feel that the quantitative findings support our qualitative impressions and hypotheses in each instance though they do not constitute any proof for the same. We have stressed only those results where a number of independent facts point in the same direction.

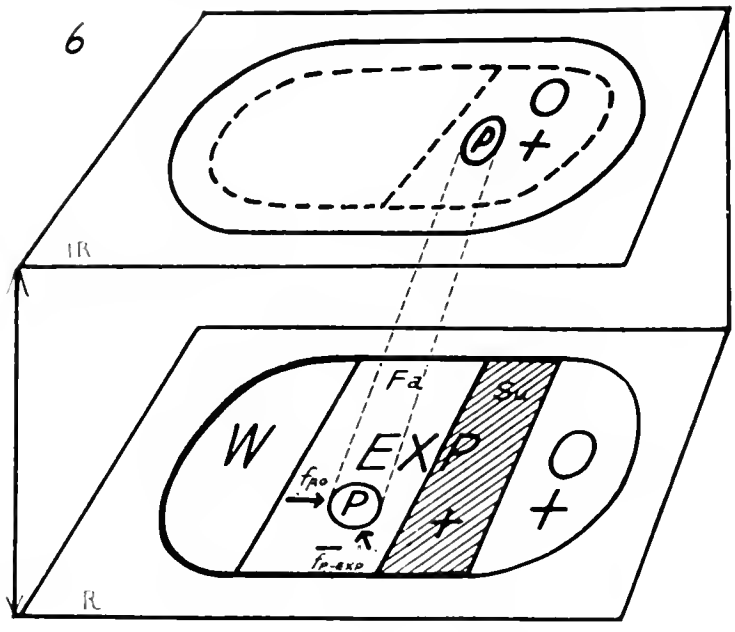


Figure 6. The Experiment as a Means to the End of Leaving the Hospital
Hypomanic Subject 42 (p. 226) at first looked upon the experiment (EXP) as a means to the goal of getting out of the hospital (O). Success (Su) therefore had at first a positive valence. With continuous failure (Fa), however, the experimental situation itself acquired a negative valence; the person (P) left this unpleasant reality level (R) and escaped to the level of irreality (IR), where he could enjoy pleasant fantasies of life at home, outside the hospital (O). The force toward the region outside the hospital ($f_{P,O}$) thus became a force "upward" toward the level of irreality, and away from the experimental situation ($f_{P,-EXP}$).

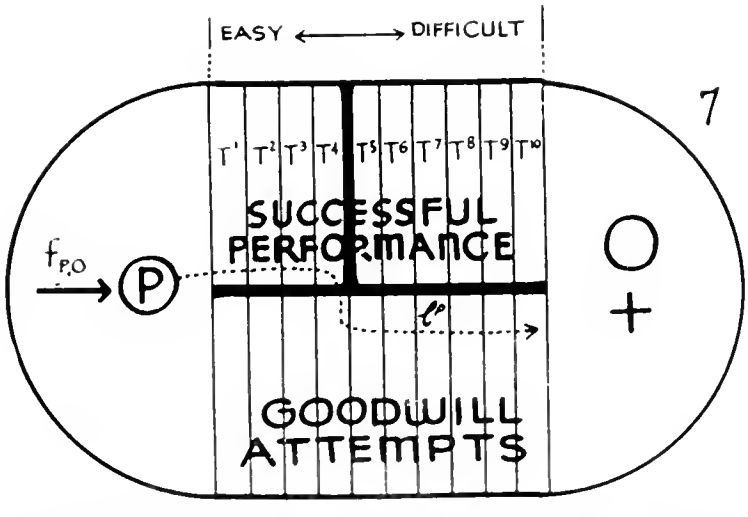


Figure 7. The Experiment Ceases to Be a Level of Aspiration Situation
Hypomanic Subject 42 at first looked upon successful performance as a path to getting out of the hospital (O). With repeated failures he decided that this path was blocked to him, but he still attempted to reach the same goal by another path, doing all the tasks in order, as a way of gaining the good will of the experimenter. Both types of behavior were determined by the force toward getting out ($f_{P,O}$). The locomotion of the person (P) is indicated by a dotted line (l^P).

Results

The Beginning Level of Aspiration

In previous studies on the level of aspiration, the subject's first choice before he has experienced either success or failure on the tasks, has been considered of special interest. It reveals the subject's general estimate of his own abilities and his attitude towards the possibilities of success or failure.

Table 1 shows the average beginning level of aspiration of our manic, depressed, and normal subjects on the maze and the peg board experiments. From these subjects' general behavior, one should expect the manics to have an abnormally high beginning level of aspiration, and the depressives to have an abnormally low one.

On their first choice, this is true for the manics in both experiments. If we consider the manics' beginning level of aspiration on the following series (B, C, and D), however, it is found in spite of the fact that B and C are predominantly success series, the beginning level of aspiration of the manics drops down to a level considerably below that of the normals, while the difference between the beginning level of aspiration on series A and that on series B, C, and D does not seem to be of any significance for the depressives and normals. The difference between the beginning level of aspiration on task A and the beginning level of aspiration on tasks B, C, and D is 3.8 for the manics, .7 for the depressives and .4 for the normals. In order to determine whether this result might be ascribed to chance, due to the small number of subjects, we checked this item for each one individually and found that each manic subject lowered his level of aspiration after the first choice with the exception of one subject who chose only one task on each series. We ascribe this result to the extreme sensitivity to failure, coupled with the great lability of the level of aspiration which we have found in all of our manic subjects. The first experience of failure is particularly disturbing to those subjects as it is so much out of keeping with their general mood and their pretences of superior ability. It discourages them to such a degree that they are much more cautious on all following choices, even though they experience success later on.

It will be noticed that the difference between the beginning level of aspiration of the depressives and that of normals is small in both experiments. This means that the depressive subjects have not

TABLE 1

THE BEGINNING LEVEL OF ASPIRATION IN SERIES A COMPARED TO THAT IN SERIES B, C, AND D IN THE PEG BOARD TEST AND IN THE MAZE EXPERIMENT

Group	*Number*	*Series A*	*Standard Deviation*	*Series* $\frac{B+C+D}{3}$	*Standard Deviation*	*Critical Ratio*					
						Series A			*Series* $\frac{B+C+D}{3}$		
						Manics vs. Depressives	*Manics vs. Normals*	*Depressives vs. Normals*	*Manics vs. Depressives*	*Manics vs. Normals*	*Depressives vs. Normals*
Peg Board Experiment											
Manics	6	6.5	5.28	2.7	2.55	0.73	0.41	1.19	4.25	4.85	0.87
Depressives	17	4.9	1.89	5.6	2.26						
Normals	20	5.6	1.66	6.0	2.49						
Maze Experiment											
Manics	7	6.9	4.56			0.57	0.66	0.16			
Depressives	16	5.8	3.35								
Normals	18	5.6	3.95								

lowered the normal standards set up for their achievements, however much they may have lowered their self-esteem. The results on the mazes show the same differences between the three groups of subjects, though much less pronounced and without statistical significance.

It is worth while mentioning that the beginning level of aspiration not only shows a similar relation between manics and depressives and manics and normals for both the peg board and the maze experiment, but that also the absolute heights of these levels of aspiration are rather similar in both experiments in spite of the different nature of the activities. The values for the manics are 6.5 and 6.9, for the depressives 4.9 and 5.8, for the normals 5.6 and 5.6. Offhand one would expect that the same individual in an identical mood, e. g., with the same degree of cautiousness, may still start at different points of a 12-point scale in different activities. For the probability is that the level of difficulty of the scale of the one activity will, as a whole, lie either higher or lower than that of the second. In other words, given the same amount of cautiousness, one would expect a subject to choose a lower level in relation to a difficult activity than to an easier one.

That this is not the case indicates that the subjects in our experiments take the given layout as the main reference of standards: they seem to perceive the graded series of twelve tasks in such a way that they regard tasks 1 and 12 immediately as something very easy and very difficult respectively and the levels close to the middle as those of "medium" difficulty. One may expect that this would not be the case, if the subject were familiar with the activities by previous experience. In an unfamiliar situation, however, the subject seems to accept the presented range of difficulties as an absolute framework for his standards.

Actually the peg board series contained twelve steps as against fifteen steps in the maze experiment. This may be the reason why the beginning level of aspiration of the manics and depressives in the maze experiment is slightly higher than in the peg board experiment.

The Effect of Success and Failure on the Beginning Level of Aspiration

Both Hoppe (9) and Jucknat (11) found that after the experience of failure on one series, the beginning level of aspiration on another series is usually lowered, while after the experience of success the beginning level of aspiration on the next series is usually somewhat higher.

The following tabulations give the effect of varying degrees of failure and success (peg board experiments) and of complete success and failure (maze experiments) upon the beginning level of aspiration on the subsequent series of tasks. On the optimism test only the normal group of subjects reacted in the expected manner. Their beginning level of aspiration is highest after complete and

Peg Board Experiment

Group	*Subjects*	*In First Series*	*After Series A*	*After Series B*	*After Series C*
Manies	6	6.5	4.0	3.6	3.8
Depressives	16	4.9	4.7	4.7	4.9
Normals	20	5.6	5.2	5.9	6.8

Series A (predominant failure) — Failure Success-Failure
Series B (complete success) — Success-Success-Success
Series C (predominant success) — Success-Failure Success

Maze Experiment

Group	*In First Series*	*Subjects*	*After Success*	*Subjects*	*After Failure*	*Subjects*
Manies	7.6	7	2.5	2	3.2	5
Depressives*	6	16	7	7	5.5	9

*No data for normal subjects is available as the normal subjects were tested under a slightly different set-up where each subject was given either only success or only failure mazes.

predominant success (5.9 and 6.8 respectively) and lower after predominant failure (Series A). The depressives have practically the same beginning level of aspiration for all of the series. This agrees with our previous statement that this group seems to be less influenced by the character of the situation or task and more by their own state of mind, which changes but little during the experiment. For the manies on the other hand, the tendency to lower their level of aspiration after the first encounter with failure [14] is so strong as to overshadow everything else. On the maze experiment the manies show the same extreme difference between their first and second beginning level of aspiration as we have seen in the peg board test, while the depressives have a somewhat higher beginning level of aspiration after success (7) than after failure (5.5). These results must be viewed very cautiously not only because of the small number of subjects but also because the data is not consistent enough to allow for any definite conclusions.

The difference between the manies and all other groups of subjects is marked enough to warrant some further discussion. The manic subjects approach the tasks in a superficial manner. In accordance with their general mood and increased self-esteem they take rather a high board or maze. This is not because they do not mind failure or do not expect it, but because they do not take the whole situation seriously enough to consider failure as a real possi-

[14] See discussion on page 218.

bility. After their first encounter with failure on the reality plane, however, they react by a very marked fear of failure, which they now consider highly probable on most levels of difficulty. This fear of failure is so marked as to overshadow the effect of subsequent experiences of success and failure in many instances.

Another way of ascertaining the effect of failure and success as it carries over from one series to the other, is by comparing each subject's beginning level of aspiration in one series with both the beginning and the end level of aspiration (last choice) of the preceding task. The following tabulation shows the same difference in the behavior of the manic subjects as contrasted to that of the

Group	*Subjects*	*From Series A to B*	*From Series B to C*	*From Series C to D*	*Average Change*
		Beginning Level of Aspiration Compared To End Level of Aspiration			
Manics	6	—2.5	—3.5	—.5	—2.2
Depressives	17	— .2	0	.2	.1
Normals	20	— .3	.2	.2	.2
		To Beginning Level of Aspiration			
Manics	6	—2.8	— .6	.8	—1.4
Depressives	17	.8	— .3	.6	.6
Normals	20	— .3	.7	.9	.6

Series A (predominant failure) = Failure-Success-Failure
Series B (complete success) = Success-Success-Success
Series C (predominant success) = Success-Failure-Success
Series D (complete failure) = Failure-Failure-Failure

normal and depressed ones, as was found in the tabulations on page 233. The beginning level of aspiration of the manic subjects is more mobile than that of the other groups, but appears to be determined by the fear of failure on an as yet untried series rather than by the experience of success or failure on the preceding series. The figures for the depressives are almost identical with those of the normals; their beginning level of aspiration is much more constant, but at the same time more appropriate to the experience of success or failure on the preceding series.

The Effect of Failure and Success on the Shifts of the Level of Aspiration

All investigators who have used the level of aspiration situation have found that, as a rule, normal subjects raise their level of aspiration after success and lower it after failure. Jucknat (11), using the same procedure as we did on the maze experiment, with

normal adults, found that in the success series the subjects raised their level of aspiration in 83.5 per cent of all shiftings of the level of aspiration, and lowered it in 9 per cent of the cases, while in the failure series the percentage for raising was 27 per cent and for lowering 73 per cent. The following tabulation shows our results

Group	*After Success*	*After Failure*
	Instances	
Manics	58	70
Depressives	65	66
Normals	91	127
Raising Level of Aspiration (in percent)		
Manics	80	63
Depressives	55	43
Normals	71	56
Lowering Level of Aspiration (in percent)		
Manics	4	24
Depressives	12	21
Normals	19	23
Staying on Same Level of Aspiration (in percent)		
Manics	4	3
Depressives	8	11
Normals	2	13
Stopping (in percent)		
Manics	12	10
Depressives	25	25
Normals	8	8

with the identical set-up. It will be noted that our results with normals lie in the same direction, but the differences are much less marked. The percentage of raising in the success series is 71 per cent and that of lowering 19 per cent, which is in close resemblance to Jucknat's (11) result, but in the failure series the percentage of raising was 56 per cent and that of lowering 23 per cent. In contrast to Hoppe's (9) and Jucknat's (11) findings, our subjects did not lower their level of aspiration much more frequently after failure than after success. A partial explanation of this difference will be found by comparing the percentages of staying on the same level of aspiration in the success and the failure series. They make it obvious that after failure the normal subjects had a relatively strong tendency to stay on the same level of aspiration instead of raising it as they did after success. The reasons for this will be discussed at a later time.[15]

[15] See page 256.

It will be seen from the above tabulation that the manic and depressed subjects differ markedly in the frequency with which they raise and lower their level of aspiration in the two situations. Both in the failure and in the success situation, the manics raise their level of aspiration more frequently than do the depressives; after success they lower their level of aspiration less often than the depressives, but under failure they lower it slightly more often than the depressives; the tendency to stay on the same level is much stronger in the depressives than in the manics, both in the success and failure situation.

Table 2 indicates the percentile frequency of raising, lowering, staying on the same level, and stopping, for each of the four degrees of success and failure. The most outstanding result to be gained from this table is that the manic group of subjects is much more sensitive to the degree of success and failure than either the depressives or the normals. They raise their level of aspiration most frequently in the B series (complete success); next frequently in C (predominant success); next frequently in A (predominant failure); and least frequently in D (complete failure). In the other direction, they lower their level of aspiration more frequently in the predominant and complete failure series (7 per cent and 9 per cent) than in predominant and complete success (0 per cent and 5 per cent). The depressive subjects, on the other hand, seem to respond but little to the different degrees of success and failure though in the same direction. Their response to failure is more marked than their response to success, as they also lower their level of aspiration most frequently in the complete failure and predominant failure series.

The second very striking result from Table 2 is that the difference between the manics and the depressives is very marked after complete success and after mixed success and failure (A, B, and C) but after complete failure (series D) the two groups react in a very similar manner.

It is also of interest that in each case, i. e., regardless of the degree of success and failure, the frequency of raising is greater for the manics than for the depressives and that in all but one case the frequency of lowering is greater for the depressed group than for the manics.

It will be recalled that in devising the peg board experiment, our purpose had been to test whether or not the manic subjects would be inclined to consider two failures and one success as a success

TABLE 2

THE PERCENTAGE OF RAISINGS, LOWERINGS, STAYINGS ON THE SAME LEVEL OF ASPIRATION AND STOPPINGS ON THE OPTIMISM TEST

Group	*Subjects*	*Raisings*	*Stayings*	*Lowerings*	*Stoppings*	*Cases*	*Raisings*	*Stayings*	*Lowerings*	*Stoppings*	*Cases*
		Series A*					Series B**				
Manics	6	36	12	7	43	14	48	19	5	28	21
Depressives	17	23	6	13	58	30	17	13	4	66	24
Normals	20	29	0	17	54	31	26	0	9	65	27
		Series C**					Series D*				
Manics	6	46	8	0	46	13	9	28	9	54	11
Depressives	17	10	10	0	80	20	10	10	15	65	20
Normals	20	18	0	5	77	25	34	14	13	39	33

Series A (predominant failure) = Failure-Success-Failure

Series B (complete success) = Success-Success-Success

Series C (predominant success) = Success-Failure-Success

Series D (complete failure) = Failure-Failure-Failure

and subsequently raise their level of aspiration, and whether or not the depressive subjects might show the opposite tendency. Table 2 shows that on the whole this is the case. (The ratios of raising to lowering are 36:7 in manics, as against 23:13 in depressives.)

Figure 8 shows that the ratio between raising and lowering the level of aspiration is greater for the manics than for the depressives at all points. However, this difference is much more marked after complete and partial success than after complete failure. In other words, the exaggerated optimism which manics show in a partially successful situation tends to break down to a level below normal and close to the depressives after complete failure. From the fact that the manics show a very striking difference in optimism between successful and unsuccessful situations we are inclined to conclude that they are particularly sensitive to failure. This was especially noticeable in the qualitative behavior where it seemed to us that the depressives are much less dependent upon the situation than the manics.

It could be asked, why the ratio of raising to lowering is greater after predominant success than after complete success (particularly for the manics). The reason might be that the subjects did not like to endanger a complete success by raising.

There is a difference noticeable, both in the peg board and in the maze series, between our findings in normal subjects and those of Hoppe (9) and Jucknat (11): After complete failure the normals raise their level of aspiration about twice as often as they lower it, whereas Hoppe's and Jucknat's subjects show predominant lowering after failure. On the optimism test, the normal subjects lowered their level of aspiration most frequently after predominant failure (series A) and next frequently after complete failure (series D). They raise their level of aspiration most frequently after complete failure, however, and next frequently after predominating failure. In order to understand this result, it is necessary to take into consideration the fact that the frequency of staying on the same level is greater in the series D (complete failure) than in the other series A and C. On the other hand, "stopping," i. e., not making more than one choice, is less frequent in the complete failure series than in any other.

The difference between our results and those of Jucknat (11) are to be explained in part by the difference in experimental techniques and in part by the cultural and ideological background of the subjects. In Jucknat's (11) experiment, the subject was forced either to raise his level of aspiration or to lower it, or not to make any choice at all, while in our experiments they had always the possibility of choosing a task on the same level of difficulty. It is to be presumed that the same factors which caused Jucknat's (11) subjects to lower their level of aspiration more frequently after failure, are responsible for the tendency of our subjects to stay on the same level after failure. In

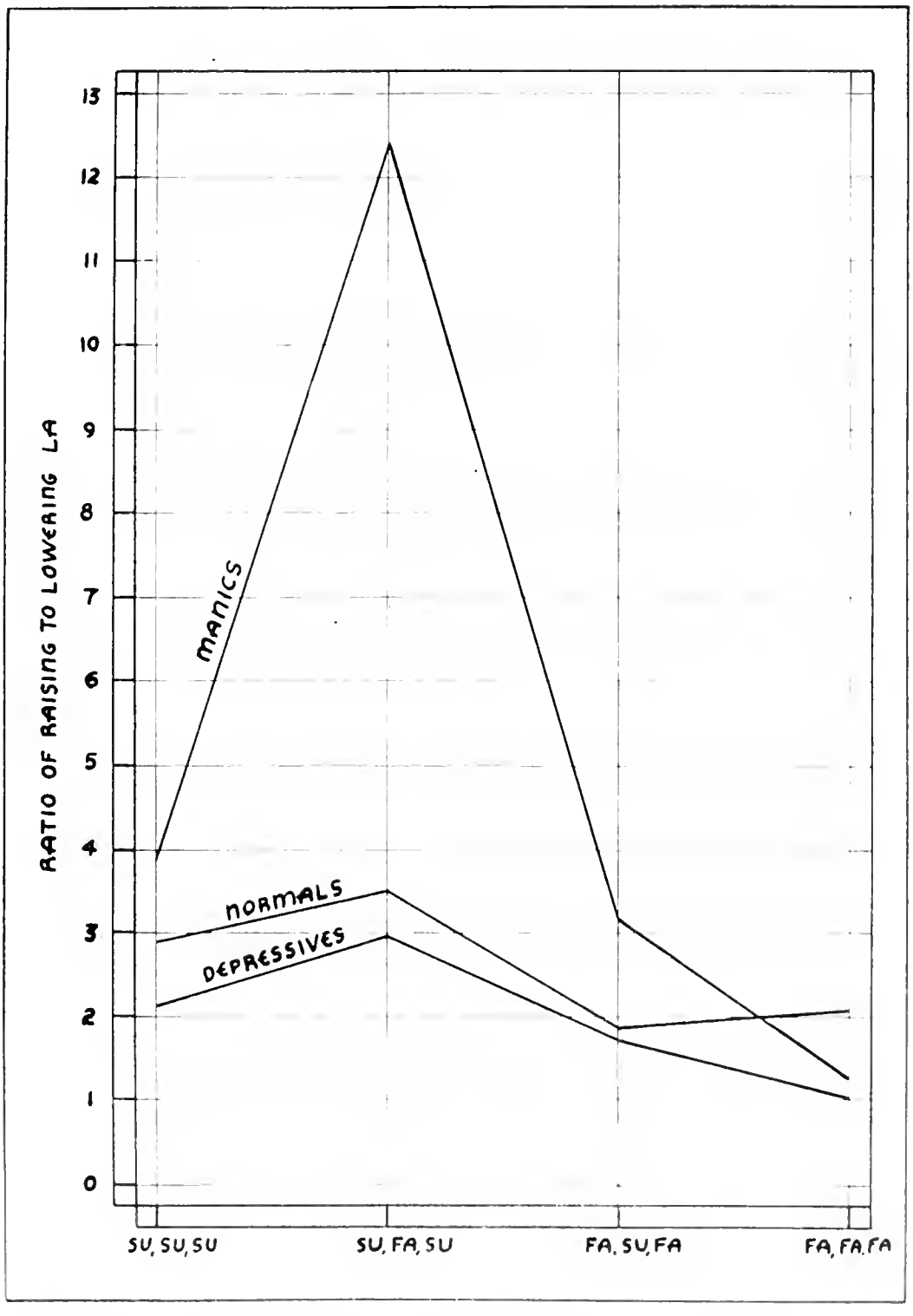


Figure 8. Ratios of Raising to Lowering the Level of Aspiration

The tendency to raise the level of aspiration is higher for the "optimistic" manics than for the "pessimistic" depressives, at all points. However, the difference is much more marked after complete and partial success than after complete failure.

addition, however, it is quite evident that our normal subjects were more interested in the failure tasks than in the success ones. In approaching the tasks, most of them seemed confident that they could succeed on them and were therefore not greatly surprised and stimulated when they actually did succeed. When they met with failure, however, it was felt as a challenge and a threat to their self-esteem. As one subject put it: "It (i. e., experience of failure) was like a withdrawal of support." The different subjects met this situation in a different manner, but all of them were more deeply involved with the tasks and felt the need to re-establish their "good standing" with the experimenter and themselves. The above is probably true for both the German and the American groups of subjects, but their reaction to this situation is different. The German subjects tended to lower their level of aspiration and tried their best to achieve success on a lower level, while the American subjects showed a decided tendency to raise their level of aspiration after failure. This we ascribe to certain very definite differences in the ideological background of the two groups. In the United States, special stress is laid on the ability to "take it." It is considered undesirable to admit failure, to "give in," and to be a "quitter." The schools, the movies, magazine articles, and most other institutions responsible for what one might call "the cultural milieu," impresses upon the minds of young Americans that "your failures are stepping stones to your successes" and that, however often a person goes "down and under," there is always a way of setting himself up again. We consider it possible, and, in fact, highly probable that such an attitude to failure in general carries over to the reactions to failure in a specific task situation.[16] It was interesting to observe how little our subjects were able to understand the motives for their actions in this situation. When, during the introspections, they were asked for the reasons for their specific choices, several of them thought that they had lowered their level of aspiration while in reality they had raised it. Others seemed quite puzzled and made remarks like, "I could not tell you why I took a bigger one (after failure); you would think I'd have chosen a smaller one," while others accompanied the raising of their level of aspiration after failure by rather emotional statements, as for instance that they wanted to take a bigger one "just because I could not do it," or "just from stubbornness."

The Degree of Emotional Involvement in Success and Failure as an Index of Involvement in the Tasks

One of our assumptions in the above interpretation of the findings was that the subjects are more involved and interested in the failure tasks than in the success tasks. It will be recalled that the experimenter, as well as the two observers, gave a subjective judgment of the strength of the experience of success or failure after each trial. While we are aware of the subjective nature of this data, we feel that the comparatively close agreement between the

[16] Gould (7) points out the relationship between the subject's reactions to failure on the tasks and the ideological background in greater detail.

two observers and the experimenter, as well as the consistency between our findings on the mazes and the peg board experiment, indicate that it really expresses the degree to which the subjects showed their reaction to the experience of success and failure in a valid, if not statistically reliable manner. The following tabulation shows the percentage of weak, strong, and very strong success and failure experiences for the different groups of subjects in the

Group	*Subjects*	*Incidents*	*Per Cent*			*Incidents*	*Per Cent*		
			*Success**	*Success***	*Success****		*Failure**	*Failure***	*Failure****
			Maze Experiment						
Manics	7	58	56	39	5	70	50	43	7
Depressives	16	65	72	25	3	66	54	37	9
Normals	17	48	95	5	0	83	60	30	10
Average	13	57	74	23	2.6	73	54	38	8
			Optimism Test						
Manics	6	103	67	24	9	74	19	57	24
Depressives	17	142	80	18	2	146	40	47	13
Normals	20	167	83	17	0	181	39	55	6
Average		137	78	19	3	132	32	53	15

*Ordinary
**Strong
***Very strong

maze experiment and the optimism test respectively. It will be noted that all three groups tend to experience failure with a greater degree of emotional involvement than success. The average percentage of strong and very strong success is 25.6 per cent on the mazes, and that of strong and very strong failures is 46 per cent. On the peg board test the corresponding values are 22 per cent as against 67 per cent. The difference is most pronounced for the normal group of subjects for which the percentages are 5 per cent and 17 per cent respectively for strong and very strong successes as against 40 per cent and 61 per cent respectively for strong and very strong failures.

The greater emotional reaction to failure in comparison to success can be explained by the general theory of success and failure. It was Hoppe's (9) theory, which has since been widely accepted, that the psychological experience of success or failure does not depend so much upon the objective level of performance, but upon the relationship between the level of performance and the level of aspiration. In the event of failure, the level of performance is below the level of aspiration; in the event of true success, the level of performance exceeds the level of aspiration. This was really the

case in Hoppe's (9) test of target shooting, where a subject could exceed his level of aspiration by doing better than he had hoped for. In the case of the maze and peg board experiments, however, he can never do better than reach his level of aspiration, as he can do no more than complete the task in time or not complete it.

This is really a difference in the goal structure which is developed in respect to the two types of tasks. Figure 9 shows the goal structure on a task like target shooting and on a task like solving mazes. In the former, aside from the region corresponding to the level of aspiration, several regions (B_1, B_2, B_3) below the level of aspiration and several regions above the level of aspiration (C_1, C_2, C_3) are distinguished. If the performance reaches any of the C regions the subject will experience success; if he reaches the level of aspiration region (A) he may be fairly satisfied but will hardly have a strong feeling of success; if performance falls in any of the B regions he will experience failure. On the maze task, on the other hand, the regions below as well as above the level of as-

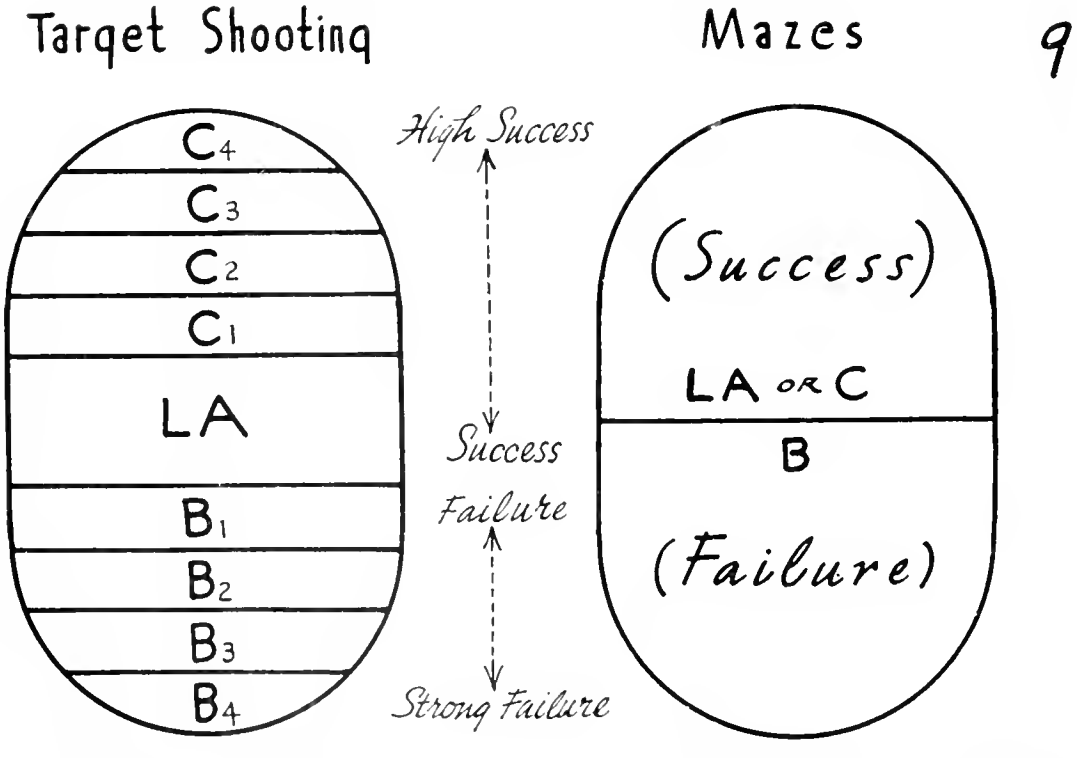


Figure 9. Differences of Goal Structure in Target Shooting and Maze Situations

In target shooting, several regions below the level of aspiration (LA) are distinguished (B_1, B_2, B_3, B_4), and several regions above it (C_1, C_2, C_3, C_4). In the maze situation, only two regions are distinguished: success, which is at or above the level of aspiration, and failure, which is definitely below it. This may explain why in the maze situation the subjects showed a decided response to failure, but were rarely elated by success.

TABLE 3

THE AVERAGE NUMBER OF VOLUNTARY CHOICES AND THE AVERAGE SIZE OF STEP IN CHANGING THE LEVEL OF ASPIRATION

Group	*Mazes*	*Standard Deviation*	*Peg Boards*	*Standard Deviation*	*Critical Ratios*					
					Manics vs. Depressives		*Manics vs. Normals*		*Depressives vs. Normals*	
					Mazes	*Peg Boards*	*Mazes*	*Peg Boards*	*Mazes*	*Peg Boards*
Average Number of Voluntary Choices										
Manics	16.2	7.07	5.8	4.85	3.51	1.96	3.06	1.81	.84	.24
Depressives	5	6.95	1.8	2.04						
Normals	6.9	6.18	2	3.09						
Average Size of Step										
Manics	1.5	.51	1.5	2.14	.36	.56	2.75	.42	2.97	.25
Depressives	1.4	.79	1	.70						
Normals	2.7	1.66	1.1	1.61						

piration are not structured. A subject who finishes a maze in time does not know whether he did better than was required (exceeded his level of aspiration) or just reached his goal. When a subject fails he knows that his performance was below his goal, that is the situation is much as it was in the target shooting. It is, therefore not surprising that our subjects showed a decided response to failure, but with the exception of some manics seemed hardly ever elated by success.

The Number of Choices, Size of Steps, and Mobility of the Level of Aspiration

The number of choices and the size of steps with which a subject shifts his level of aspiration has been found of value in differentiating various types of behavior in the level of aspiration situation. Table 3 shows the average number of choices, beyond the one choice on each task which is required (voluntary choices) and the average size of step, independently from the direction of the step. As was to be expected from these subjects' attitude to the experiment as a whole, the average number of voluntary choices is very much higher for the manic subjects than that for the normals and depressives in both experiments, and the normal subjects make slightly more choices than do the depressives. In regard to the size of the step, we cannot make any definite statement.

It is of interest to determine whether the average size of step is smaller in raising the level of aspiration or in lowering it. Table 4 shows the average sum of the size of steps when raising and lowering the level of aspiration, for the different groups of subjects. In the same table we indicated also the mobility of the level of aspiration, which we define as the sum of the sizes of step raising plus the sum of the size of step when lowering the level of aspiration. This latter item we consider a good measurement of the ease with which the subjects shift their level of aspiration, because it takes into account both the frequency of shifts and the size of each step.

In both the peg board and the maze test, the mobility of the level of aspiration of the manics was much higher than that of the depressives. The mobility of the level of aspiration of the normal subjects is between the manic and the depressive group. In all but one of the comparisons (the exception being the depressives on the maze experiment) the sum of the size of steps upward is greater than the sum of the size of steps downward. This indicates that on the whole there is less resistance to raising the level of aspira-

TABLE 4

THE AVERAGE SUM OF THE SIZE OF STEP IN RAISING AND LOWERING THE LEVEL OF ASPIRATION AND THE MOBILITY OF THE LEVEL OF ASPIRATION

Group	*Average Sum of Size of Step*				*Mobility of Level of Aspiration*	*Critical Ratio*					
	Raising		*Lowering*			*Raising*			*Lowering*		
	Mean	*Standard Deviation*	*Mean*	*Standard Deviation*		*Manics vs. Depressives*	*Manics vs. Normals*	*Depressives vs. Normals*	*Manics vs. Depressives*	*Manics vs. Normals*	*Depressives vs. Normals*
Mazes											
Manics	16.1	11.69	11.4	9.40	27.5	2.2	1.6	1.5	1.2	2.8	2.0
Depressives	5.6	6.32	7.1	6.25	12.7						
Normals	8.6	6.00	2.2	1.75	10.8						
Peg Boards											
Manics	6.0	7.23	2.7	5.52	8.7	1.4	1.1	0.6	0.6	0.6	0.3
Depressives	1.7	2.38	1.2	2.25	2.9						
Normals	2.4	4.57	1.4	1.81	7.4						

tion than to lowering it. (A discussion of the constellation of forces responsible for this conflict situation will be found in Chapter V.) This assumption is confirmed by our previous finding that all groups of subjects raise their level of aspiration more frequently than they lower it, both in success and failure situations. (See tabulation, p. 233 and Table 2.)

The Duration of Choice and Fluctuation

The time which a person needs in order to arrive at a decision, in our case the duration of choice, is probably directly related to the severity of the conflict in which the subject finds himself while making a decision. It has recently been used and discussed as a conflict indicator by Lewin (17) and by Tolman (22). In our study we found it a very good method of differentiating between the different groups of subjects. Table 5 gives the average duration of choice for the different groups of subjects. In both experiments the average duration of choice is much longer for the depressives than for either of the other groups, which is undoubtedly due to the retardation in both action and decision commonly found in depressed patients. (The critical ratios show significance for manics versus depressives and depressives versus normals on the mazes and for depressives versus normals on the peg boards.) The difference between the normals and manics, in regard to the aver-

TABLE 5

AVERAGE DURATIONS OF CHOICE

Group	*Number of Instances*	*Average Duration*	*Standard Deviation*	*Critical Ratio*		
				Manics vs. Depressives	*Manics vs. Normals*	*Depressives vs. Normals*
Mazes						
Manics	106	2.2	3.2	4.1	0.3	5.6
Depressives	121	5.1	5.4			
Normals	178	2.4	2.8			
Peg Boards						
Manics	55	4.0	4.5	1.2	2.1	3.6
Depressives	90	5.0	6.1			
Normals	117	2.6	1.9			

age duration of choice, is negligible on the mazes while on the peg boards it is somewhat shorter for the normals than for the manics.

Aside from the duration of choice, Jucknat (11) used another independent indicator of the presence of conflict: whether or not the subjects look at other tasks during the choice, indicating at least a tendency to take these other tasks into consideration. On our tables, we refer to this item as "fluctuation," since the subjects would often look back and forth between the same tasks, fluctuating, as it were, on the scale of difficulties. If we accept the presence of such fluctuation as a sign of conflict, and if the duration of choice is another sign of conflict, we should expect the duration of choice to be longer on the choices during which fluctuation takes place than on those during which it had not been observed. The following tabulation bears out this assumption. In the maze experiment the duration of choices during which fluctuation

DURATION OF CHOICE, SECONDS

Group	*Fluctuation*	*Cases*	*No Fluctuation*	*Cases*
		Mazes		
Manics	9.9	18	1.5	103
Depressives	8.8	41	3.3	80
Normals	4.1	47	2.5	104
Average	7.6		2.4	
		Peg Boards		
Manics	6.4	22	1.9	28
Depressives	8	38	2.5	55
Normals	4.5	41	1.7	66
Average	6.3		2.0	

had been observed was 7.6 seconds as against 2.4 seconds for choices without fluctuation: the corresponding values for the peg board experiment are 6.3 seconds as against 2.0 seconds. This difference is found also for the manic, depressed, and normal groups of subjects separately.

The fluctuation, i. e., how many other tasks the subject takes into consideration and whether he looks upward or downward from the task he finally takes, is of interest, because it gives an indication of the nature of the conflict. This means whether it is mostly a question of wanting to raise the level of aspiration, but not daring to, as seems to be the case with many of our normal subjects, or of wanting to lower the level of aspiration, but feeling that one "ought not to go down too far," as was the case with several of our

manic and depressed subjects. Table 6 shows the average range of fluctuation and the average fluctuation upward and downward for all groups of subjects. It will be noted that the data for the maze and peg board tests do not agree very well and that the difference between normals and psychotics is not very marked. This apparent lack of difference in the reactions of the subjects is due not so much to the small number of cases as to the fact that the different

TABLE 6

THE AVERAGE EXTENT OF FLUCTUATION UPWARD AND DOWNWARD AND THE AVERAGE RANGE AND FREQUENCY OF FLUCTUATION ON THE MAZE AND PEG BOARD EXPERIMENTS

Group	*Average Fluctuation*		*Number of Fluctuations*			*Average Range of Fluctuation*
	Up	*Down*	*Up*	*Down*	*Total*	
Mazes						
Manics	2.8	2.4	12	12	17	3.6
Depressives	2.0	1.9	23	35	41	2.6
Normals	2.5	3.7	24	27	160	4.2
Peg Boards						
Manics	3.3	1.8	12	17	21	3.4
Depressives	2.8	2.4	33	24	39	3.8
Normals	2.0	2.3	35	58	60	2.3

types of depressed subjects react in a different manner, but their differences cancel each other when they are all included in one average. We shall come back to this point at a later time.

It was stated previously that motor retardation is one of the most prominent characteristics of the depressed state. This factor was measured by comparing the duration of performance on the peg boards, separately for each level of difficulty and for each series of tasks, for the different groups of subjects. Table 7 shows that on all but one level of difficulty the average duration of performance is longer for the depressives than for either one of the other groups. The critical ratios expressing the difference between manics and depressives and between depressives and normals are fairly significant, while the difference between the manics and normals is less pronounced.

TABLE 7

THE AVERAGE DURATION OF PERFORMANCE ON DIFFERENT LEVELS OF DIFFICULTY

Tasks*	Manics			Depressives			Normals			Critical Ratios		
	Instances	*Average*	*Standard Deviation*	*Instances*	*Average*	*Standard Deviation*	*Instances*	*Average*	*Standard Deviation*	*Manics vs. Depressives*	*Manics vs. Normals*	*Depressives vs. Normals*
						Series A						
1 to 4	4	25.5	6.50	10	35.2	16.11	22	23.0	10.94	1.4	0.5	2.2
5 to 8	7	56.6	11.86	14	77.4	28.94	21	43.0	12.16	2.4	2.5	4.2
9 to 12	3	152.0	39.82	0			5	74.8	27.70		3.0	
						Series B						
1 to 4	21	27.7	8.65	39	44.0	29.21	50	47.0	8.37	3.3	6.6	0.5
5 to 8	7	47.0	4.66	21	85.9	26.03	54	49.5	8.70	16.0	1.2	1.9
9 to 12	6	73.8	5.81	3	112.3	8.18	8	67.9	4.43	7.3	2.0	7.2
						Series C						
1 to 4	7	25.4	9.10	12	32.5	10.89	29	24.5	9.20	1.5	0.3	2.2
5 to 8	2	44.0	3.00	16	97.8	36.12	27	49.3	13.40	16.0	1.7	13.0
9 to 12	3	76.7	2.36	0			5	61.0	5.22		5.8	

*As the number of instances would have been too small had we used averages for each level of difficulty we divided the twelve tasks into three groups. Tasks 1 to 4 are the smallest boards, 5 to 8 the medium sized ones, and 9 to 12 the large ones.

Quantitative Differences Between the Various Types of Retardation

Our qualitative distinction of several different types of depressives according to the type of retardation gains in significance if we are able to support it by our quantitative results.

In order to see whether our grouping of the depressed subjects according to the type of retardation they showed can be supported by the measurements of the speed of motor performance and from the speed of decision, we have calculated these items separately for the various subgroups of depressives. Table 8 shows the average duration of performance for the levels 1 to 4, 5 to 8, and 9 to 12 respectively for each of these subgroups as well as the total average. The fact that the total average duration of performance of the normals is somewhat higher than that of the nonretarded depressives is due to the higher level of aspiration of the normals. As to the depressives, it will be noted that the durations of performance are on the whole longer for the motor retarded and the decision and motor retarded groups than for any of the others. They are shortest for the nonretarded group of depressives.

The degree and amount of decision retardation was calculated in the same manner as that of motor retardation, using the duration of choice instead of that of performance. The following tabulation shows the average duration of choice for each group of depressed subjects. Both in the peg board and the maze experiment the duration of choice is longest for the all decision retarded group.

Group	*Average Duration of Choice, Seconds*	*Instances*	*Subjects*
	Mazes		
Normals	2.4	178	18
Nonretarded	3.2	28	4
Major decision retarded	5.3	4	1
All decision retarded	10.4	11	3
Decision and motor retarded	4.4	55	5
Motor retarded	4.6	22	3
	Peg Boards		
Normals	2.6	117	20
Nonretarded	2.1	34	6
Major decision retarded	3.1	19	3
All decision retarded	12.7	11	3
Decision and motor retarded	4.9	20	3
Motor retarded	6.2	10	2

TABLE 8

THE AVERAGE DURATIONS OF PERFORMANCE FOR DIFFERENT TYPES OF DEPRESSIVES

Group	*Subjects*	*Tasks 1 to 4*		*Tasks 5 to 8*		*Tasks 9 to 12*		*Total Average*
		Average	*Instances*	*Average*	*Instances*	*Average*	*Instances*	
Normal	19	35.3	101	48.1	102	67.9	18	44
Nonretarded	6	22.0	31	61.6	7	62	1	35.3
Major decision retarded	2	36.7	7	52.6	7			44.6
All decision retarded	1	76.6	7	52.6	7			85.0
Decision and motor retarded	2	75.1	9	101	14			90.6
Motor retarded	2			109	13			109

The decision and motor retarded, major decision retarded and motor retarded subjects all show considerable decision retardation. The fact that the motor retarded subjects seem to show such a great amount of decision retardation might be interpreted as contradictory to our previous statement that these subjects have no difficulty deciding what they want, but find it hard to carry out their decisions. It will be remembered, however, that decision retardation was measured by the number of seconds which elapsed between the beginning of the choice and the moment when the subject touched the chosen board. It is our distinct impression that we are dealing here with a delay in *acting* upon their decision, i. e., in stretching out their hands and taking the board rather than with a true decision retardation.

Figure 10 represents the duration of performance on the peg boards and the duration of choice on both the peg board and the mazes for the various types of depressives. The relations discussed express themselves clearly in this graph. Both choice distributions show a steep peak for the all decision retarded and the slight increase for the motor retarded accounted for by the time necessary to "perform" the choice by touching the chosen object. The performance distribution, on the other hand, reaches a steep maximum for the motor retarded. On the whole, therefore, the classification of the subjects on the basis of our impression is well substantiated by their actual decision time and their duration of performance.

Table 9 shows the average number of voluntary choices and the mobility of the level of aspiration for the different depressed groups and the normals in both experiments. In both experiments, the mobility of the level of aspiration is higher for normals than for any of the depressed groups (with the single exception of the major decision retarded subjects on the peg boards), but the difference is much more marked in the maze experiment than in the peg boards. This may be related to the fact that, on the whole, it is much easier to shift the level of aspiration in big steps in the maze test, because the individual tasks take less time to perform, and there are more tasks to choose from than in the peg board test where each individual choice seemed to carry more weight. In the peg board test, the decision retarded and motor retarded groups differ most markedly from the normal in that they take fewer tasks and have the smallest mobility of the level of aspiration. This is in accordance with our qualitative findings, but in the maze test

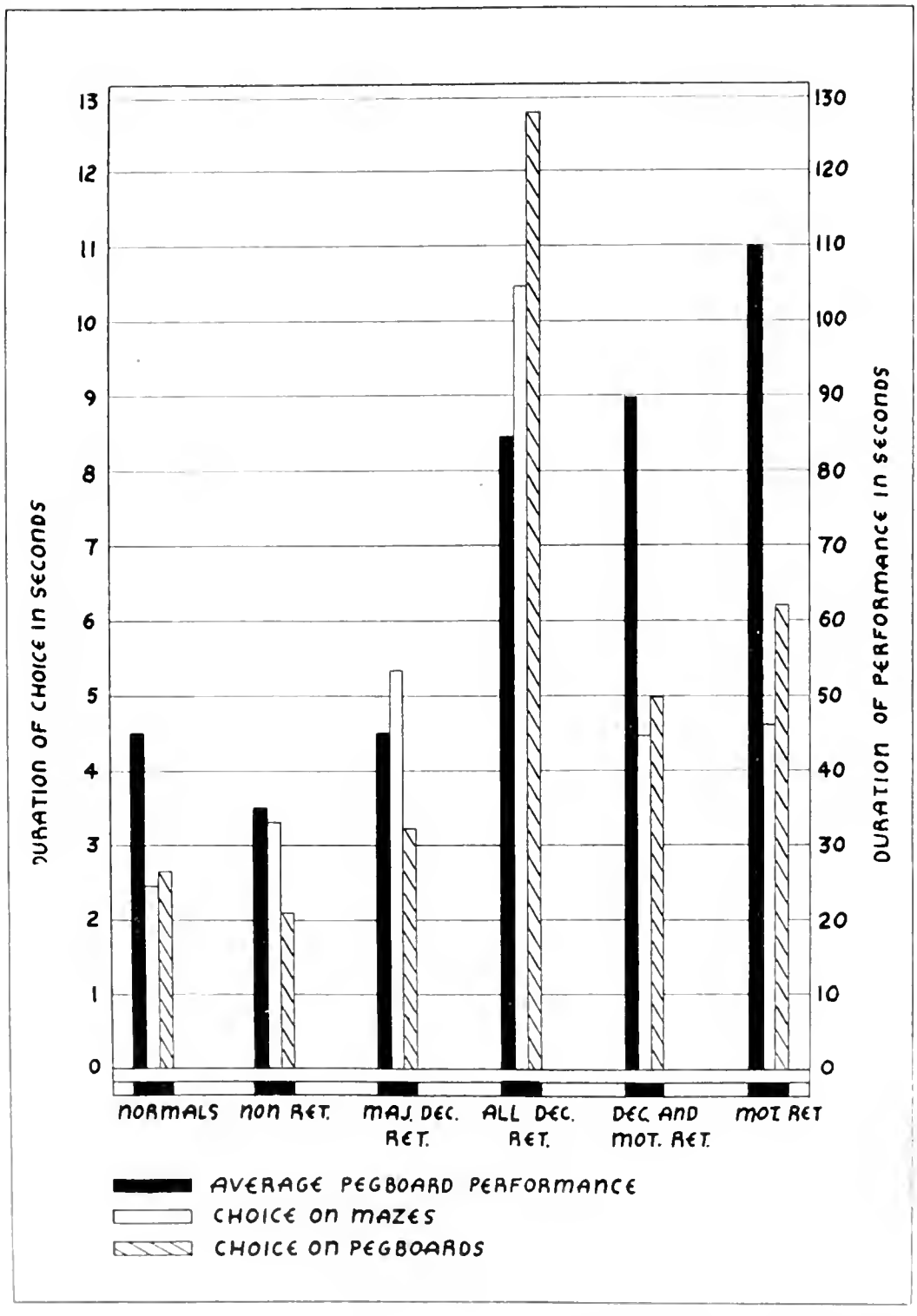


Figure 10. Motor and Decision Retardation of Different Types of Depressives

The black bars, repressesting time of peg board performance, indicate the degree of motor retardation. Both decision retarded and motor retarded patients show motor retardation in this task. The white and shaded bars, representing the time taken to make a choice, indicate the degree of decision retardation. Here the decision retarded patients show a much larger amount of slowing down. The major decision retarded patients are relatively normal in both.

some other factor must have been operative to change the psychological situation.

It is of some interest that on the maze experiment the average number of voluntary choices is highest for the motor and decision retarded group, and on the peg boards this group of subjects shows one of the two highest values for this item. This is well in line with our qualitative finding that this type of depressed subjects strongly felt the obligation "to keep on trying."

TABLE 9

THE MOBILITY OF THE LEVEL OF ASPIRATION (MAZE AND PEG BOARD EXPERIMENTS) FOR ALL TYPES OF DEPRESSIVES

Group	*Mazes*			*Peg Boards*		
	Subjects	*Average Voluntary Choices*	*Mobility of Level of Aspiration*	*Subjects*	*Average Voluntary Choices*	*Mobility of Level of Aspiration*
Nonretarded	4	5	4.8	6	2	2.6
Major decision retarded	1	2	2	3	2.6	6
All decision retarded	3	2	2.3	3	1	0
Decision and motor retarded	5	11	10.4	3	2.6	3.1
Motor retarded	3	5.3	11.2	2	1	1
Normal	18	6.9	22.4	20	2	3.7

In our comparison of the manics and the depressives as a whole, we used both the duration of choice and the presence and range of fluctuation as conflict indicators. We have already shown that the duration of choice is longer, i. e., more retarded in the all decision and in the decision and motor retarded groups than in the others. Table 10, which gives the average fluctuation up and down and the average range of fluctuation for each group of subjects, shows that the all decision retarded group has a greater range of fluctuation than do the other groups with the single exception of the major decision retarded on the mazes, which is based on one subject. This again points to the same fact that the conflict at the time of choosing a task is more severe for the decision retarded subjects than for any other group.

TABLE 10

THE EXTENT OF FLUCTUATION FOR ALL TYPES OF DEPRESSIVES

Group	*Mazes*			*Peg Boards*		
	Average Fluctuation					
	Up	*Down*	*Range*	*Up*	*Down*	*Range*
Nonretarded	2.3	.9	1.9	.6	.3	1
Major decision retarded	1	3	4	2.1	2.2	3.8
All decision retarded	3	1.3	2.7	3.9	1.8	5
Decision and motor retarded	1.4	1.5	1.9	2.6	1.6	4.1
Motor retarded	1.2	1.6	1.6	2	2.2	3.8

Summary

Summarizing our statistical results, which are not considered conclusive in themselves but can support or fail to support most of our assumptions about the difference between the different groups of subjects in regard to their level of aspiration reactions, we may say that all items recorded showed a difference between the manics and the depressive group as a whole. The manic subjects make more choices; respond more freely to success and failure, raising and lowering their level of aspiration in proportion to the degree of success or failure they experience; use bigger steps both in raising and lowering their level of aspiration; have a greater mobility of the level of aspiration; are more labile in their reactions in that they lower their level of aspiration after the first experience of failure and keep it on a relatively low level from then on; and have a shorter duration of choice.

In regard to the differences between the manic and the depressive group as a whole, the findings in the maze test and the peg board test agree in every point.

The duration of choice is considered a reliable indicator for the strength of a conflict as it increases with another independent symptom of conflict, namely with fluctuation.

Some differences in the reactions of our normal subjects from those reactions of the subjects used by Jucknat (11) and Hoppe (9) may be explained on the basis of differences in the structure of the tasks and in the ideological background of the subjects.

The qualitative grouping of our subjects into retarded and non-retarded ones, and according to different types of retardation were confirmed by the quantitative measurements. Indications of conflict, such as duration of choice and fluctuation are marked in the decision retarded groups. The indication of freedom in shifting the level of aspiration, that is the mobility of the level of aspiration, is very small for the all decision retarded group.

TOPOLOGY OF THE LEVEL OF ASPIRATION SITUATION

As we mentioned earlier, it seems to us that it is necessary to understand the structure and dynamics of an individual experiment before more exhaustive studies can be made on the same problem. Using the formulations of Hoppe (9) and Jucknat (11) as a basis, we can represent the level of aspiration situation topologically. The analysis of the reactions of the different types of subjects will be simpler and more meaningful if we first demonstrate the method in a more general manner and on a hypothetical case.

Before the subject can develop a level of aspiration by choosing a certain task, he must agree to comply with the instructions and to attempt the tasks. As we have expressed it earlier, he must enter the experimental situation; and throughout the experiment, after the completion of each task, he must make up his mind as to whether or not he wants to take another task before he can decide which one to take.

Normally our subjects were so interested in the tasks that they did not consider the possibility of discontinuation until after they had made several choices. In some cases, however, where the subjects feared failure and did not enjoy the tasks, this region had a strong positive valence from the very beginning. As far as their own feelings are concerned, these subjects would wish not to enter the task region at all, or to leave it as soon as possible. Nevertheless, even among this group of subjects there were only two persons who refused to take another task after their first one, and only one who did not take any. The reason for this is, we are sure, the social pressure exerted by the experimenter and possibly by the nurse. The subject feels that the experimenter wants him to try the tasks, in fact, he frequently thinks he has to comply with the instructions. Consequently he tries to overcome his own feelings of resistance rather than attempting to resist the social forces surrounding him. It is, therefore, necessary to determine for each

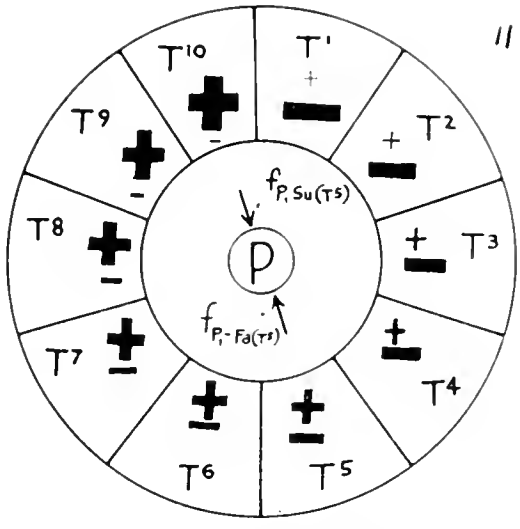


Figure 11. The Topology of a Choice Between Ten Tasks Graded in Difficulty

In this figure the positive and negative valences (+ and —) of the ten tasks (T^1—T^{10}) indicate only what the person (P) would like or dislike, regardless of the factor of probability. Success on the easiest task (T^1) would be only very slightly pleasant (+) a small plus sign, while failure on it would be extremely unpleasant (—) a large minus sign. Success on the hardest task (T^{10}) would be extremely pleasant, failure only slightly unpleasant. Force arrows are illustrated only for one of all the possible choices; the force acting upon the person toward success in task 5 ($f_{P,Su(T^5)}$) is approximately equal to the force away from failure in the same task ($f_{P,-Fa(T^5)}$). This equality is indicated by the equal length of the arrows, and by the equal size of the valence signs.

individual choice whether or not the subject considered the possibility of discontinuation.

Figure 11 represents the topological situation when the subject is confronted with ten different tasks of increasing degrees of difficulty and has already decided to take a task (number 5). Task 1 is the easiest in the scale, and task 10 the most difficult. Our question is: what are the forces determining which of these regions he will enter?

In task 5, for example, we find that on the one hand the subject has a tendency to take it, because he should like to succeed in it, but on the other hand he has a tendency not to take it because he does not wish to experience failure. As his choice of any task may lead to either one or the other we always find these two opposing forces in regard to each task. In more accurate words, success on task 5 has a positive valence driving the person towards making this choice, and failure on task 5 has a negative valence, operating against his choice of this task. This situation exists at the same time in regard to all of the ten possible choices. That is, there exists a force driving the person towards each of them, and a force

driving him away from each one of the tasks.[17] Which one he finally takes depends upon the relative strength of these forces.

Ordinarily success on a higher level of difficulty is valued more highly than success on an easier task. That is, the force driving the person to take task 10 is greater than the force towards task 1. Using the symbol *f* for force and *P* for person, and *Su(1)* or *Su(10)* for success in task 1 or success in task 10, this statement would read, in terms of a formula, as follows:

$$(1) \quad |f_{P,Su(1)}| < |f_{P,Su(10)}|$$

It is equally true that failure on an easy task is felt more keenly than failure on a difficult task. It seems excusable to be unable to succeed on a very difficult task, but we feel humiliated when we are unable to accomplish a very simple thing. In regard to the choice situation under discussion this means that the force away from failure on the difficult tasks, such as task 10, is less strong than the force away from failure on an easy task, for instance task 1. In terms of a formula this reads:

$$(2) \quad |f_{P,-Fa(1)}| > |f_{P,-Fa(10)}|$$

where *Fa(1)* means failure on tasks 1 and *Fa(10)* failure on task 10. Figure 12 shows schematically the relative strength of the valence away from and towards each task. From this and our foregoing statements it would seem that the subject must take the most difficult task, because failure is less disagreeable and success more pleasurable the greater the difficulty of the task. In other words, if we indicate the resultant force in direction towards task 1 by fp,1 and the resultant force in the direction of task 10 by $f_{P,10}$, and if furthermore the forces $f_{P,Su(1)}$ and $f_{P,-Fa(1)}$ ($f_{P,Su(10)}$ and $f_{P,Fa(10)}$ respectively) were the only forces determining the resultant $f_{P,1}$ (and $f_{P,10}$), then it would always hold true that

$$(3) \quad |f_{P,1}| < |f_{P,10}|$$

because according to formulas (1) and (2) we can say that

$$(3a) \quad |f_{P,1}| = f_{P,Su(1)} - |f_{P,-Fa(1)}| < |f_{P,Su(10)}| - |f_{P,-Fa(10)}| = |f_{P,10}|$$

This means that in cases of choice between different levels of difficulty of one type of task a person should always choose the more

[17] See Figure 11.

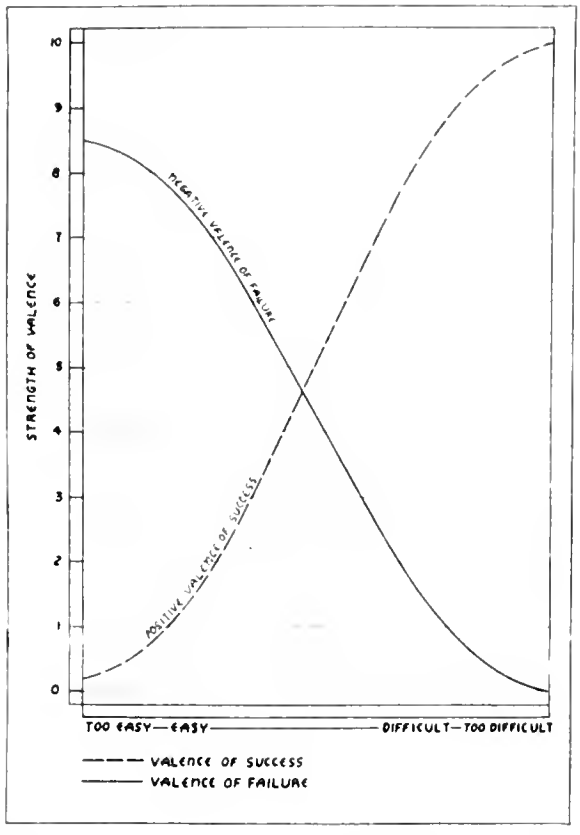


Figure 12. Relationship Between Difficulty and the Valences of Success and Failure

The facts of Figure 11 are here represented graphically, in schematic form. Quantitatively, this is only one possible relationship between levels of difficulty and the valences of success and failure. The essential thing is that success is more and more desirable as tasks become more difficult, and failure is more and more undesirable as tasks become more easy. The slopes and the maximum heights of these curves differ, of course, for different individuals and different tasks.

difficult one. This would mean that there exists *a general tendency to raise the level of aspiration.*

It was noted by Hoppe (9), Frank (3, 4, 5, 6) and others that such a tendency exists. This tendency to prefer more difficult tasks is somewhat paradoxical if one considers the law of parsimony, to which it seems to be in opposition. Instead there appears to exist a general "striving towards the higher." Formula (3) shows this striving to be the outcome of a constellation of forces which depends on a specific social evaluation of success and failure on the different levels of difficulty.

Although such a tendency to raise the level of aspiration is evident, both every day experience and experiments show that a person does not actually choose the most difficult task in all choice situations of this type. In order to understand this fact, which is

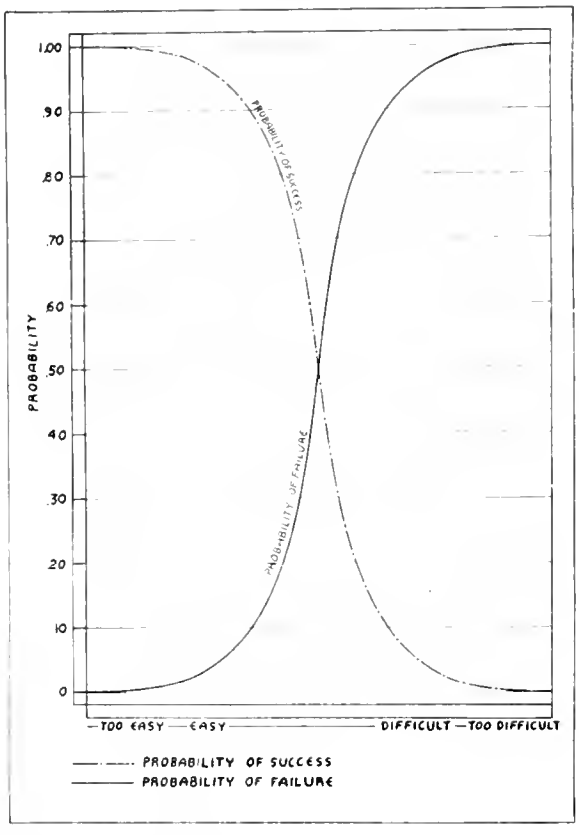


Figure 13. Relationship Between Difficulty and the Probabilities of Success and Failure

This is again one possible relationship; the essential thing is that success is less and less probable as tasks become more difficult; failure is less and less probable as tasks become more easy. It should be noted that the trends of these curves are exactly the reverse of the trends of the curves in Figure 12. As success becomes more desirable, it becomes less and less probable; as failure becomes more undesirable (in the easiest tasks) it also becomes less probable.

in apparent contradiction to our previous statements, we must take into consideration yet another factor, that of the person's estimate of the *probability* of success and failure on each level of difficulty. Generally failure is considered more probable on difficult tasks than on easy ones, while success is considered more probable on easy tasks than on harder ones. Figure 13 gives a schematic representation of the probability of success and failure for each level of difficulty. Mathematically speaking these two curves are, of course, the exact reverse of each other.[18]

[18] We should like to point out, however, that psychologically speaking this need not be the case. In considering the probability of success on a certain task a person may feel rather than think that he has an "even chance" of succeeding in it, i. e., that the probability of success is 50 per cent. If he were asked to consider the probability of failure on the same task, however, he might feel that he is quite likely to fail, i. e., that the probability of failure

That in making a choice a person will be guided largely by what he considers probable is in accordance with everyday experience. He will not take a task on which he might like to succeed but which he knows he cannot do. On the other hand, he would not take the easiest task just because success is a 100 per cent probable on that level. Thus it is clearly the interaction between the positive valence of success on a task and the probability of success on the same task that determines the choice. Figure 14 is a schematic representation of the probability of success and the positive valence

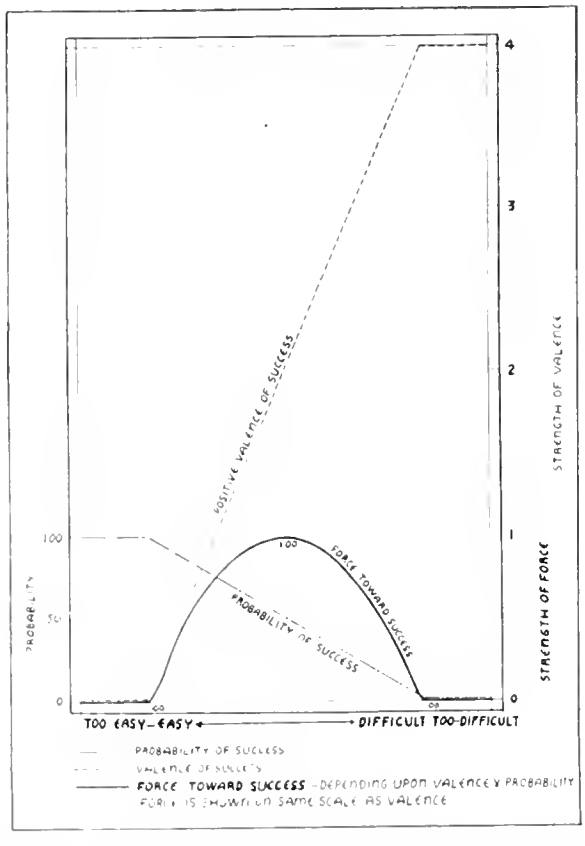


Figure 14. Relationships Between Difficulty and Three Other Variables: Valence, Probability, and the Resulting Strength of Force

In this figure the opposite trends of valence and probability are shown again (for success only), and also a curve representing "force toward success," which is computed as the product of valence times probability. This is again only one possible relationship; for simplicity, the valence and probability curves are assumed to be straight lines. The force curve is, at each point, their product. The essential thing is that (whatever the shapes of the valence and probability curves may be), the force curve is zero when either of its determining factors (valence or probability) is zero; and that force is at a maximum when both valence and probability are intermediate in amount. This accounts for the general tendency to set the level of aspiration at an intermediate level of difficulty.

is more than 50 per cent. While there are as yet no accurate data on which to base such a statement we think that such "inconsistency" between the objective or mathematical facts and the psychological facts frequently exists.

of success on each task. We have indicated the curve for the product (Va(Su) · Prob.(Su)) of the valence and probability of success. One might say that the strength of the valence is "weighed down" by the probability. If the subject's behavior were determined by such a "weighted valence" he should always choose a task of medium difficulty. As a matter of fact, both Jucknat's (11) and our own data show that very frequently in the level of aspiration situation the subject will take a task of medium difficulty as his initial choice.

The concept of probability is merely a logical one. We will have to ask in what way this logical probability becomes psychologically effective. This difficulty becomes most apparent in the analysis of cases where the subject's first choice does not fall on a task of medium difficulty, and such cases are not infrequent.

There are several factors important here. Figure 14 is based on the total scale of difficulties existing for a person, ranging from too easy to too difficult tasks. The tasks presented in the experiment, however, might appear to the subject not to cover the entire range but to lie on either the easy or the difficult end of the scale. To some the whole group of tasks seemed rather simple, and what was the highest degree of difficulty on our tasks still seemed fairly easy to them. In other cases the opposite was the case. The actual first choice, even if it were determined by the probability factor alone, would then not lie in the middle of the experimentally given scale of difficulty.

There is yet another factor which modifies the subject's choice. In all studies of level of aspiration behavior it has been found that some subjects will be determined primarily by their hopes, i. e., they will attempt very difficult things even though they know that their chance for success is almost zero, yet they like to "take the risk." Others may be extraordinarily cautious; they will take only tasks which they are quite certain they can solve; yet another group may be guided in their choices by a sober attempt to do their best, keeping within the bounds of reasonable promise of success. Frank (3) has made a special study of such individual differences. He ascertained the ratio between a subject's level of aspiration and his level of performance on three different types of tasks and found a statistically reliable consistency of this ratio for the individual subjects. In other words he found that if a person takes a task much below his true ability in a speed printing test, he is very likely to take a task much easier than he could really accomplish

in another type of task. On the basis of this ratio between level of aspiration and level of performance Frank (4) divided his subjects into three types: the cautious, the realistic, and the cloudy types. Gould (7) repeated this experiment with a greater variety of tasks and a greater number of subjects. She found no statistically reliable consistency of the ratio between level of aspiration and level of performance on different types of tasks. A careful qualitative analysis led her to the conclusion that the subject's verbal statement as to his goal on the succeeding trial [19] is no indicator of the true level of aspiration but ". . . the statement of expectation is a mechanism to protect the individual from failure." (p. 276) Her analysis of the qualitative behavior supports Hoppe's (9) and Frank's (4) statements regarding the different types. She too speaks of extremely cautious, realistic and too hopeful types of subjects. This distinction was found to be very helpful in the analysis of our own data.

In order to demonstrate the approach used for this very complex situation we shall now consider a hypothetical case of the simplest possible type. The person (ap) (Figure 15) has already made up his mind that he is going to take a task and is now deciding whether to take task 10 or one of those lower than 10. From our previous discussions (formulas (2) and (3)), we know that the force towards success on task 1 is smaller than the force towards success on task 10 ($|f_{P,Su(1)}| < |f_{P,Su(10)}|$). The force away from failure on task 10, on the other hand, is smaller than the force away from failure on task 1 ($|f_{P-Fa(1)}| > |f_{P-Fa(10)}|$). We also know that the probability of success on task 1 is greater than the probability of success on task 10.

$$(4) \quad \text{Prob}\,(\text{Su}(1)) > \text{Prob}\,(\text{Su}(10))$$

while failure is unlikely on 1 and more probable on 10.

$$(5) \quad \text{Prob}\,(\text{Fa}(1)) < \text{Prob}\,(\text{Fa}(10))$$

This means that these two factors, the strength of the person's desire for success and fear of failure on the one hand, and his estimate of the probability of success and failure on the task on the other hand, operate in opposite directions.

The statement that the subject's actual choice depends not only

[19] It will be remembered from our previous discussion that Frank (3, 4) used the subject's verbal statement as to what they thought they could achieve on the next trial as an indicator of the momentary level of aspiration.

upon the valences of success and failure, but also upon his estimate of the probable outcome of his performance on each of the tasks implies the element of time perspective. The person is determined not only by the psychological present, but also by what he pictures to himself as the probable events at a later time, namely, after the completion of the task. We found it difficult to represent mathematically this factor which is not a force in itself, but a condition modifying the strength of forces. It seems to us that the solution presented in Figure 15 enables us to deal with this element of probability of success and failure in a mathematically correct, if not yet exact, manner by relating the probability to the psychological future and more precisely to the level of expectation in the psychological future.

Whenever the person is in doubt as to whether or not he is able to succeed on a certain task, he really expects both success and failure in regard to the same task and at the same time. He expects these, however, with different degrees of certainty, i. e., he may consider failure more probable than success. If we view this expectancy of both success and failure as a case of overlapping situations we can go one step further and express the degree of probability of either success or failure by the potency of the success or failure situation in regard to a specific task and at the level of expectation (psychological future). The concept of potency has been used previously [20] to denote the relative dominance which two overlapping fields exert upon the behavior of a person at the same time. One can express this potency or relative weight of a situation by assigning the value 1 to a situation in case it exclusively determines the behavior of a person at a given time. In case of overlapping situations fractional values are assigned to each of the two fields in such a way that the fractions sum up to 1, for instance if a potency of .8 is assigned to one field and a potency of .2 is assigned to the other: this means that the person's behavior is determined predominantly by the first field and only slightly by the second. If a potency of .5 were assigned to each of the fields it would mean that the person's behavior was influenced equally by both fields.

In Figure 15 as well as in the later ones the potency of the success and failure fields at the level of expectation in regard to each task shall express the probability of success or failure on this task as estimated by the person at the time of the choice. In our example, where the choice is made only between task 10 and "below

[20] For a fuller discussion of the concept see Lewin (17), page 20.

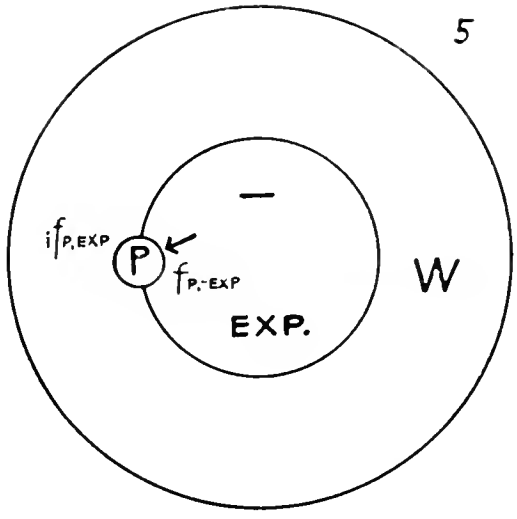


Figure 5. Social Forces in an Unpleasant Field

Decision retarded Subject 57 (p. 225) disliked the experimental situation (EXP) and wanted to leave it by returning to the ward (W). Her "own" wish is indicated by the black vector ($f_{p,-exp}$). But she felt obligated, due to the social pressure of the experimenter (E) (indicated as an "induced" force, $if_{p,exp}$ to remain in the experimental situation). The induced positive valence of the experimental situation (+) and the corresponding induced force are shown in red.

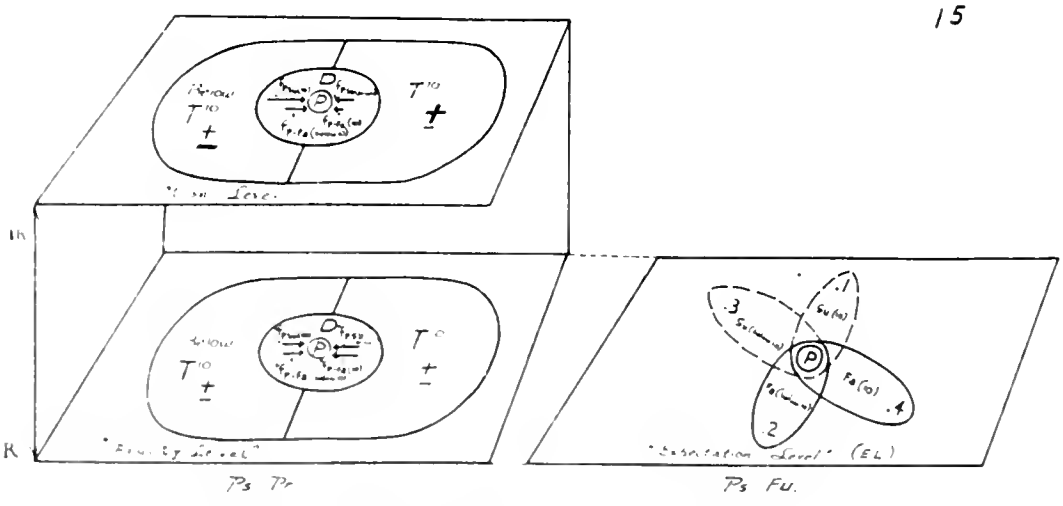


Figure 15. Method of Representation of the Level of Aspiration Choice Situation

At the given moment in physical time it is important to differentiate the psychological present (Ps.Pr.) and the psychological future (Ps.Fu.), and to view the person's behavior as carried out on different levels of a continuum from "reality (R) adjustment" to "irreality (IR) adjustments" of various degrees (e. g., "wish level," "dream level"). In the present representation of the choice situation only three sections of a total "psychological time perspective" (which includes also the "psychological past") are indicated as being of prime importance and capable of operational definition. In facing the decision of choosing between task 10 (T^{10}) or a lower task (below T^{10}), the person (P) at the "wish level," unhampered by considerations of own ability, is strongly inclined toward task 10 by the strong positive valence of success and the relatively small fear of failure as compared to failure on the

simpler tasks. But these forces at the "wish level" are weighted by the individual's expectations of success and failure (i. e., at the reality level in the P's.Fu.) which take into account own abilities, etc. Thus the actual decision indicated at the reality level in the psychological present is seen to be the resultant of "weighted forces" ("f) which are arrived at by weighting (multiplying) the forces at the "wish level" by the potency (ranging from .1 to .9) of the expectation of success and failure on the particular task.

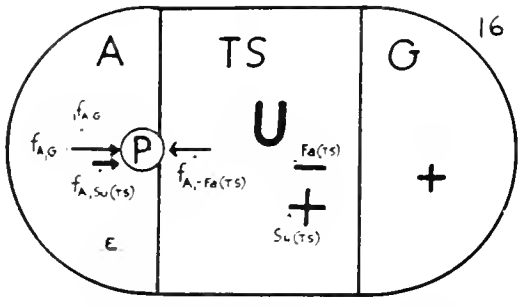


Figure 16. The Level of Aspiration Situation as an Unstructured Field

On entering the situation Subject 20 (p. 273) accepted as her own (black vector $f_{A,G}$) the goal (G) given by the experimenter (E) (induced force $if_{A,G}$), but, without any previous experience in doing the tasks, she was both attracted and repelled by the task region (TS) because she had no definite expectations as to the probability of success and failure at the different levels. The tasks represented an unstructured (U) region for her.

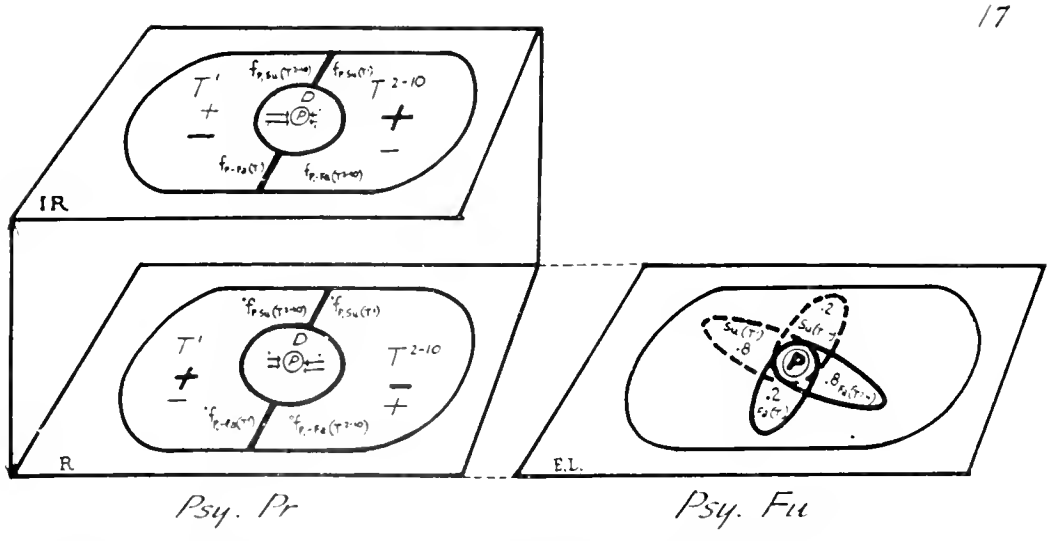
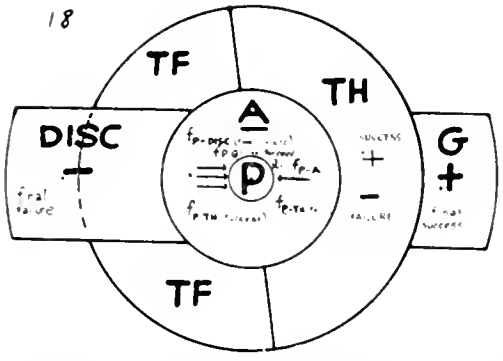


Figure 17. Distribution of Forces During a First Choice

Subject 20, in making her first choice, was deciding whether to try task 1 (T^1) or some task higher than 1 (T^{2-10}). The region of decision is represented as D. The subject was very strongly attracted by the valence of success on a higher level ($f_{P,Su(T^{2-10})}$ at IR level), but that she was strongly determined in her final choice of task 1 by reality considerations is seen by the probability potencies at the reality level of expectation (EL). The probability of success on task 1 ($Su(T^1)$) was potent (.8) as was also the probability of failure on a higher task ($Fa(T^{2-10})$), which made the final weighted forces at the present reality level R) favor a locomotion into the region of task 1.



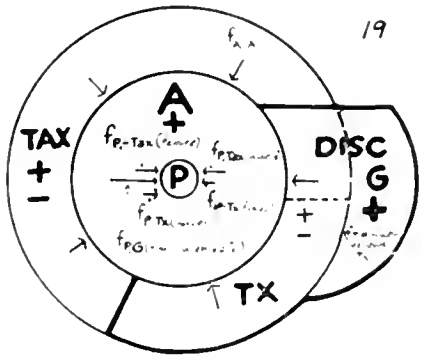
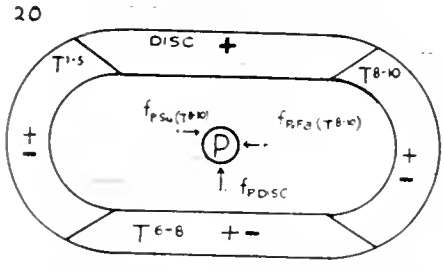


Figure 18. The Decision Situation After an Experience of Failure

After Subject 20 had experienced failure the region of making a new choice (A) possessed a strong negative valence resulting in a force (f_{P-A}) away from the region. The simplest way of leaving, by discontinuing (DISC) also had a negative valence because it was seen as an admission of final failure. The only way to achieve a final success was by choosing a new and higher task (TH) than those already failed (TF). Entering a new task also of course implied the danger of further failure.

Figure 19. The Decision Situation After an Experience of Success

After a series of successes the region A now possessed a strong positive valence for Subject 20. She wanted to remain in a situation of "having success." As she prepared to leave A by making a new choice there were forces (f_{A-A}) restraining her from leaving. Taking a higher task (TAX) had positive valence, but also the strong negative valence of failure. The subject (P) finally chose to ensure final success (G) by discontinuing (DISC) after success on a somewhat lower task (TX) than her level of ability has indicated.



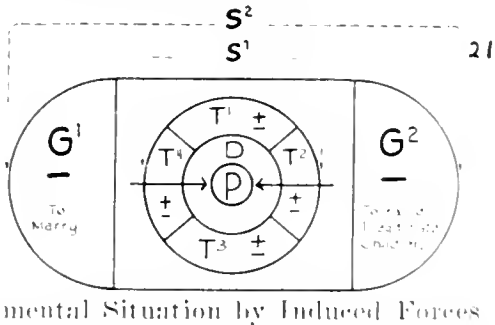


Figure 20. A Person Held in the Experimental Situation by Induced Forces

Depressive Subject 52 (p. 282) wanted very much to discontinue (positive valence in DISC, and f_{P-DISC}) but felt that she "ought" to remain. That is, the discontinuation region had a socially induced negative valence (shown in red) and there was an induced force, if $_{P-DISC}$, brought about by the presence of the experimenter (EXP). She had little personal desire to do well on the tasks, but felt that she ought to take one in keeping with her ability. This is shown by the equal balance of positive and negative valences in tasks 1 to 5 (T^{1-5}), tasks 6 to 8 (T^{6-8}), and tasks 8 to 10 (T^{8-10}), except for an additional induced valence (red) in T^{8-10}. Corresponding to this induced valence there is a second induced force, if $_{P-T^{8-10}}$. Since the forces $f_{P-SucT^{8-10}}$ and $f_{P-FaiT^{8-10}}$, would otherwise be approximately equal, the addition of the induced force caused her to choose task 8.

Figure 21. General Life Situation and Immediate Situation in a Decision Retarded Patient Suffering from Acute Conflict in the General Situation

Depressive Subject 52, even while in the experimental situation, seemed preoccupied by her major conflict. These equally balanced forces in the general life situation (S^2) overshadowed the forces in the immediate experimental situation (S^1) and seemed to retard every decision made in this narrower sphere. The person (P) is in a decision region (D), surrounded by tasks (T^1 to T^4); G^1 and G^2 are negative goals.

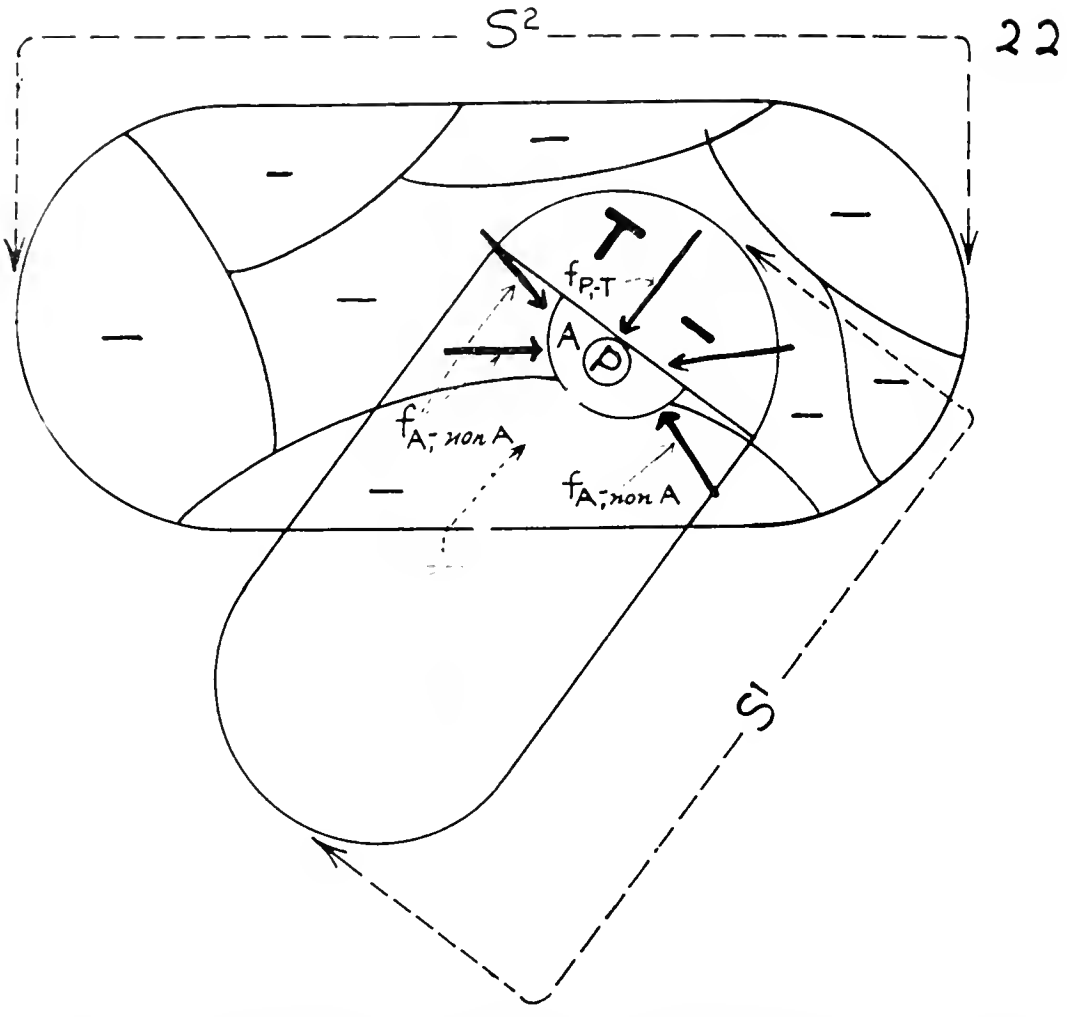


Figure 22. General Life Situation and Immediate Situation in a Motor Retarded Patient Who Found It Difficult and Unpleasant to Think of Anything Except Himself

Depressed Subject 31 (p. 286) was excessively preoccupied with thoughts of his own guilt. It was difficult and even more unpleasant for him to move out of the region of his own thoughts (A) into any other region of his general life situation (S^2). All non-A regions had a negative valence for him; forces away from these non-A regions ($f_{A,-non-A}$) tended to keep him in the region of his own thoughts even when a force ($if_{P,T}$) induced by the experimenter (EXP) in the immediate experimental situation (S^1) impelled him in the direction of the experimental task (T). T had a negative valence simply because it was a non-A region.

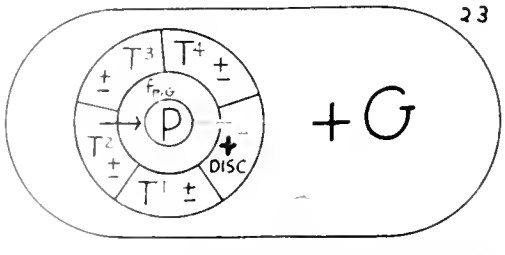


Figure 23. Nonretarded Patient Whose Main Goal Is to Finish the Experiment Quickly

Nonretarded depressive Subject 60 (p. 289) was mainly interested in getting through with the experiment quickly; she was not interested in the tasks and

seemed to develop little or no level of aspiration in them. A strong force ($f_{P,G}$) was directed toward the goal (G) of finishing. The most direct path to this lay through discontinuation (DISC), but as a result of social pressure this had an induced negative valence (red —) and there was a corresponding induced force ($if_{P,-DISC}$). This subject always chose the same task, an easy one, because she felt that any task would bring her to her goal, and success or failure meant little to her.

10'' the level of expectation will include four overlapping regions in which the person sees himself as the possible outcome of his performance. He will be either successful on 10, or unsuccessful on 10, or successful below 10, or unsuccessful below 10.

The relative weight of task 10 (composed of success in 10 and failure in 10) as against the relative weight of tasks below 10 (composed of success below 10 and failure below 10) depends upon the degree to which both tasks are being considered at a given moment. During the choice period, when the subject does not yet have a preference for one task or the other, both are considered equally and thus the combined potencies of success and failure on task 10 have to have the same relative weight as the combined success and failure on tasks below 10. In terms of a formula this statement reads:

$$\text{(6)}\quad \begin{aligned} &\mathrm{Po(Su(10))} + \mathrm{Po(Fa(10))} = .5 \text{ and} \\ &\mathrm{Po(Su(bel\ 10))} + \mathrm{Po(Fa(bel\ 10))} = .5 \end{aligned}$$

Within this limit the relation of the potency of success to the potency of failure on task 10 may have any value between 0:5 and 5:0. The same holds true for the tasks below 10.

According to the general theory of potency (see Lewin (17)) the strength of a force acting upon a person decreases or increases parallel with the decrease or increase of the potency of the corresponding force field. The force, for instance, $f_{P,Su(10)}$ in the direction towards success on task 10 we will call unweighted if this situation were the only one considered by the subject ($\mathrm{PoSu(10)} = 1$); if the potency of a situation is taken into account we will speak of a ''weighted force'' and indicate it by the symbol ^{w}f. In our example the weighted force towards success on task 10 will be denoted by $^{w}f_{P,Su(10)}$ and its strength given by the expression $^{w}f_{P,Su(10)} = f_{P,Su(10)} \cdot \mathrm{Po(Su(10))}$ according to the general assumption

$$\text{(7)}\quad {}^{w}f_{P,A} = f_{P,A} \cdot \mathrm{Po(A)}$$

In our hypothetical case the following forces are interacting: (1) the weighted force towards success on task 10 ($^{w}f_{P,Su(10)}$); (2)

the weighted force away from failure at task 10 ($^{o}f_{P,-Fa(10)}$); (3) the weighted force towards success on tasks below 10 ($^{o}f_{P,Su(bel\ 10)}$); and (4) the weighted force away from failure at tasks below 10 ($^{o}f_{P,-Fa(bel\ 10)}$).

We have seen previously that as long as the probability factor is not taken into account the person would tend to choose the more difficult tasks according to formulas (3) and (3a) because the forces towards success on the higher tasks are stronger and those away from failure are weaker than the ones related to easier tasks. This formulation which does not take into account the expectations of the person corresponds to the irreality level (see Figure 15). If we wish to include the probability factor, i. e., the level of expectation, formulas (3) and (3a) must be modified in line with formula (7) to the expression:

$$(8)\quad |^{o}f_{P,\ bel\ 10}| = |^{o}f_{P,Su(bel\ 10)}| - |^{o}f_{P,-Fa(bel\ 10)})| \gtrless |^{v}f_{P,Su(10)}| - |^{o}f_{P,-Fa(10)}| = |^{o}f_{P,10}|$$

After the substitutions indicated by (7) have been inserted the formula reads:

$$(8a)\quad |^{o}f_{P,\ bel\ 10}| = |f_{P,Su(bel\ 10)}| \cdot Po(Su\ (bel\ 10)) - |f_{P,-Fa\ (bel\ 10)}| \cdot Po(Fa\ (bel\ 10)) \gtrless |f_{P,Su(10)}| \cdot Po(Su(10)) - |f_{P,-Fa(10)}| \cdot Po(Fa(10)) = |^{o}f_{P,10}|$$

The inclusion of the probability factor may frequently change the constellation of forces as given on the irreality level (see Figure 15,IR) to such an extent as to change the direction of the resultant force.

While we cannot yet measure the absolute strength of psychological forces a hypothetical example using arbitrary values for the strength of forces and potencies may clarify the meaning of the above statement. Assuming that $|f_{P,Su(10)}| = 13$, $|f_{P,} - Fa(10)| = 3$, $|f_{P,Su(bel\ 10)} = 8$ and $f_{P,} - Fa\ (bel\ 10)| = 8$ the constellation of forces is rendered by $|f_{P,10}| = 13 - 3 > 8 - 5 = |f_{P,(bel\ 10)}|$. Assuming the potencies to be

$$Po(Su(10)) = .1$$
$$Po(Fa(10)) = .4 \text{ and}$$
$$Po(Su(bel\ 10) = .3$$
$$Po(Fa(bel\ 10)) = .2$$

the formula for the weighted forces (see Figure 15, IR) becomes:

$$|^{o}f_{P,10}| = 13x.1| - 3x.4 < 8x.3 - 5x.2 = |^{o}f_{P,(bel\ 10)}|$$

in other words the person would actually choose an easy task even though he desired success on a difficult one more than on an easy one, and even though he feared failure less on a difficult task than on an easy one.

It must be kept in mind that the above is an oversimplification, as in almost all cases such an interaction of forces exists not only for two tasks, but for several and because the possibility of discontinuation frequently complicates the picture. In addition one should keep in mind that formula (8) and (8a) apply only in cases where the choice is made between not more than two activities, for only under this condition can it be said that the force away from one task is at the same time a force towards the other one. In cases of multiple choice the relation between the directions of the various forces is more complicated. It is still true, however, that the choice corresponds to the resultant of the weighted forces in relation to success and failure on the various tasks, and the forces relating to discontinuation.

The fact that we are as yet unable to measure these forces directly, makes it somewhat difficult to apply this formula to our concrete cases though it does not lessen its explanatory value. Fortunately, there are some items of behavior, commonly exhibited by the subjects, which serve as indicators of the relative strength of the different forces. Very frequently, the subjects will verbalize while making a choice. "I don't think I can do that one up there, but maybe this one," is a characteristic remark indicating the relative potency of the success and failure fields for two different tasks.

At other times, subjects make statements as, "I don't care to try the easy ones," indicating that no or little positive valence is attached to success on these levels. "It's awful I can't even get it done on the smaller one" reveals the strong negative valence of failure at the lower levels. The subject's response to failure and success on the different levels is another indication of the strength of the valences at the different levels. If after the experience of, e. g., failure on task 4, the subject reacts by strong disappointment, that means only that the experience of failure has a strong negative valence for him though we have no proof that the expectancy of failure on 4 was as strongly negative for him at the time of the choice. This objection is probably valid for the failure situation, but we believe that if a subject shows considerable elation over his achievement on a certain task this means that he must have wanted to succeed on this task before he attempted it, i. e., that success on this level had a positive valence for him at the time of the choice. From the subjects' introspective statements after the experiment, which are made in response to specific questioning in regard to the reasons for their choices, it becomes quite clear that some subjects

are guided primarily by the principle of avoiding failure while the primary goal of others is to achieve success. Gould (7) who followed each of her experiments with a two-hour interview covering the motives underlying the subject's behavior, comes to the same conclusion. She feels that the psychological situation is quite different for subjects whose objective it is to achieve success, as compared to those who mainly wish to avoid failure, even though the physical situation is identical in the two cases. This, too, gives us some insight into the relative strength of the forces determining the subject's momentary level of aspiration.

Before leaving our hypothetical example we should like to discuss briefly the significance of the irreality level for the level of aspiration behavior. By the irreal levels of the life space we mean all the regions, the structure and state of which is determined by the person himself, by his needs and wishes, his hopes and fears rather than by the "objective" environment. In these levels there belong such activities as dreaming, daydreaming, etc. To put it crudely, in the irreality levels a person "can do what he wants to do" while on the reality level he must somehow adjust to the "hard" and unalterable facts of real life. Dynamically, the irreality levels are therefore characterized by a greater fluidity. It is easier to change the structure of the life space, the barriers either being weakened or eliminated. A person who in real life wishes to have a million dollars, may, in his daydreams, see himself as actually enjoying such a fortune. Or, the other way around, a person who in daily living fears that he will be inadequate in his work may in nightmares or even in talking to his friends see himself as being already crushed and defeated. In a certain sense, then, on the irreality levels the person is more radical; his every tendency is more readily followed out in the extreme. It is generally agreed that this part of the personality has an important influence upon behavior. We believe it to be particularly significant for success and failure situations because these are so closely related to self-esteem which is a very important and emotionally stressed part of most people's lives.

Another reason why the dynamic characteristics of the irreality levels are of interest to us is that the reality level of patients in the manic state has many characteristics of the irreality level in normals. A manic will say anything and do most things that come into his head. He is changeable and determined by his own desires and fears rather than by the outside reality.

As will become clear from the following concrete examples of the

course of events during the experiments, we do not think that the forces mentioned in this chapter are the only ones of influence in the level of aspiration situation. The subject's general life space, the degree of his excitement or lethargy, his attitude to the experimenter, to the hospital, to being tested in general, and many other factors are of equal significance. We do think, however, that the above representation furnishes a frame of reference for the discussion of the level of aspiration situation, and that it introduces concepts which are well suited to the treatment of this type of problem.

Analysis of the Peg Board Experiment With a Hypomanic Subject

Subject 20 was a nineteen-year-old girl suffering from her fourth manic attack. Previously, she had been very overactive and overtalkative, but at the time of the experiment her only clinical symptom was a mild overtalkativeness. She had been given the maze test one week previously, and was therefore familiar with the experimenter and the experimental room.

When she first entered the room the subject seemed timid and embarrassed. She looked at the test materials with a mixture of curiosity, apprehension, and pleasure. This subject accepted the experiment as a part of the hospital routine. She was used to being tested so that there was no occasion for excitement or alarm in this situation. Her goal was the one supplied by the instructions: she wanted to do as well as possible on the tasks.

Figure 16 (p. 266) represents the situation at the beginning of the experiment before the subject made her first choice. The subject's uncertainty and embarrassment at the beginning of the experiment are to be explained by the presence of an unstructured region. The subject does not yet know the tasks, she has no idea whether she will succeed or fail. The fact that she has no definite expectations, no standards by which to form an estimate, makes the task region (TS) ambivalent for her. She is attracted by the possibility of success and repelled by the possibility of failure. As we know from everyday observations, as well as from numerous case studies of maladjusted children or adults, insecurity and hesitancy as well as a certain tenseness which may easily turn into embarrassment, are frequently developed as a reaction to ambivalent fields, though these are usually of a more important character. In the case of this girl, it so happened that all the important parts of her

life were characterized by ambivalent valences which explains her strong reaction to a relatively unimportant situation.[21]

In the situation represented in Figure 16 then, i. e., when she was deciding whether or not to take any tasks at all, the subject was in a conflict situation. The forces involved were the following: $|if_{A,G}| + |f_{A,G}| + |f_{A,Su(TS)}| - |f_{A,-Fa(TS)}|$ where G is "doing as well as one can" (as a general principle of behavior during the experiment), *if* is a social force induced by the experimenter, Su(TS) is success on the task series and Fa(TS) failure on the task series. At this point the series of tasks has not yet become differentiated into individual tasks and success and failure refer to the series as a whole. As the direction $d_{A,G} = d_{A,TS}$ and therefore $d_{A,G} = \bar{d}_{A,-TS}$ we are dealing here with a conflict between the positive and negative valence (success and failure) of the task region (TS).[22] In addition there exists a conflict between the induced social force $if_{A,G}$ and the personal force $f_{A,-TS}$. The fact that the subject actually made a choice instead of stopping proves that $|if_{A,G}| + |f_{A,G}| + |f_{A,Su(TS)}| > |f_{A,-TS}|$ so that the resulting force was $|f^*_{A,TS}| > 0$.[23]

We now turn to the discussion of the subject's choice of the first board, after she had, as it were, entered the experimental situation. As far as we can ascertain from the patient's behavior, the distribution of forces during the first choice situation was approximately as represented in Figure 17, p. 266.

In this particular case we believe ourselves to be justified in deducing the actual choices from a consideration only of the forces in regard to task 1 as compared to the tasks higher than 1 because the subject did not even look at the tasks beyond the very low ones while making the choice. We have reason to assume that there was a conflict, however, because it took the subject approximately two seconds during which she gave every evidence of being in conflict, until she finally took the board.

The forces interacting in this case are probably somewhat as follows: the force towards success on task 1 which is, according to (1), smaller than the force towards success on tasks higher than 1 ($|f_{P,Su(1)}| < |f_{P,Su(ab_1)}|$); the force away from failure on task 1 which, according to (2), is stronger than the force away from failure on tasks higher than 1 ($|f_{P,-Fa(1)}| > |f_{P,-Fa(ab_1)}|$). From the

[21] Further discussion of this point will be given later.

[22] d is the symbol for direction, and $\bar{d}$ for opposite direction. See Lewin (17).

[23] f^* means resulting force.

subject's remarks during the choice it was evident that the probability of failure in regard to task 1 was less than one-half, perhaps even as low as .1 or .2, while the probability of success in regard to this task was certainly above one-half, perhaps even as great as .8 or .9. In regard to the tasks higher than 1, however, the probability of failure is much greater, we have indicated it as .8, and the probability of success proportionally smaller, namely .2. In this particular case where the subject is deciding only between the regions 1 or above 1, it is again possible to assume that the forces away from one task drive the subject toward the other one, as she has already made up her mind to enter one of the two regions anyway. In applying our formula (8) and (8a), therefore, we have put all forces driving towards task 1 on the one side of the equation and the forces driving towards the tasks above 1 on the other side. The equation now reads: $|^{o}f_{P,1}| = |f_{P,Su(1)}| \cdot Po(Su(1)) - |f_{P,-Fa(1)}| \cdot Po(Fa(1)) \gtrless |f_{P,Su(ab1)}| \cdot Po(Su(ab1)) - |f_{P,-Fa(ab1)}| \cdot Po(Fa(ab1)) = |^{o}f_{P,ab1}|$. The fact that the subject chose task 1 indicates that the probability of success on task 1 and her fear of probable failure on tasks higher than 1 (Po(Fa(ab1))) was more effective than her desire to succeed on a higher task: $|f_{P,1}| > |f_{P,ab1}|$. This means that the subject was determined in this particular choice, by what Frank (5) calls the reality factor, i. e., by her estimate of her own ability (reality level of psychological future) rather than by her own wishes or fears. We shall see later that after the experience of failure and in more disturbed patients, this is frequently not the case.

On this first board, the subject was given failure on the first trial, success on the second, and failure on the third. She reacted to these more strongly than one would expect. In the case of failure, she blushed and laughed in an embarrassed manner, apparently trying to hide her disappointment, while she showed her pleasure at success quite openly. After this experience of predominating failure, the situation was greatly changed for the subject. She felt that she had failed and that it was up to her to make up for her failure. Figure 18 (p. 267) is a topological representation of the choice situation after the subject has had the experience of predominating failure on the previous task. While making her first choice the subject had been in a neutral region, she had as yet neither failed nor succeeded. At the time now under discussion, however, the region in which the subject is while making the choice (region A) possesses a definite negative valence, it is that of "having failed." Discon-

tinuation, which would be the simplest way of leaving region A, also possesses a negative valence for the following reason: If the subject were to stop working on the tasks after the experience of failure it would mean an admission of inadequacy. Such an action would thus in a way perpetuate failure; it would change it from a temporary mishap to a final failure (fin Fa).[24] We will have to distinguish, therefore, failures and successes which have a more temporary character and which the person considers redeemable, from final successes and failures in regard to a certain series of tasks. (In cases of non-final success and failure we shall speak simply of success and failure.) The only way to leave the failure region, then, is to achieve success on another task. Taking another task of the series, (i. e., entering the task region) however, involves the risk of further failure, which of course has a strong negative valence. The conflict which the subject experienced in making her third and fourth choice on the A series (failure-success-failure) is mainly that between the desire to achieve success somehow and leave the negative region in which she is, and the fear of yet more failure. The situation was complicated by the fact that the remarks which this subject made during the choice as well as in her introspections indicated clearly that she felt a success to be of value only if it was on a task higher than the one which she had failed. Thus, success on the tasks at or below the ones she had already tried, did not have a positive valence for her. This implies a change in her goal structure. Before the first task and while working on it, her goal was simply to do as well as she possibly could. When after having completed the three trials on each board, she was asked: "Now you can either take another board on this same task or else you can stop with these and go on to the next task. Which would you rather do?" she began to mumble to herself, looking at the blackboard and counting the number of successes and failures which she had already accumulated. As she continued to have more failures than successes, she took more and more boards, even after she was tired of doing the tasks and would have preferred to discontinue.

We may now turn to the situation and distribution of forces for the subject's third and fourth choice on the A series. She now considered taking the task which she had used before, or one lower

[24] Dembo (2) found that in her experiments with anger the main motive for the subjects not to leave the disagreeable experimental situation but to continue their efforts was this disinclination to perpetuate failure.

than that, as compared to the task a step higher than the one she had already tried. If we call the last task, on which the subject experienced failure-success-failure, X we can say that the probability of failure on a task above X was rather high because this was indicated by her remarks, which expressed concern over the frequency of her previous failures. The probability of success on the level X or below X was fairly high, as the subject had succeeded on one trial already and felt that she might be able to do it again. However, she attached no particular value to success on these levels as described above. In other words, Po(Fa(ab and x)) became very high and Va(Su(X)) and Va(Su(belX)) became negligible.

We have seen from the analysis of this subject's first choice on series A that she was guided largely by the reality factor, that is by her estimate of the probability of success and failure. During her second and third choice the subject was guided not only by a situation, the topology of which corresponds to the present reality level in Figure 15 (p. 265), but by the more inclusive regions we have discussed. This means that the forces away from the region of having failed ($f_{P,-A}$), away from final failure ($f_{P,-fin\ Fa}$) and towards final success ($f_{P,fin\ Su}$) are added to the ones which these situations and the first choice situation had in common. In the case of subject 20 these added forces, especially the force $f_{P,-fin\ Fa}$ were so strong that the future level of expectation, i. e., the probabilities of success and failure, became relatively unimportant. Thus we find that this subject chooses a difficult task, going against the reality factor and in line with the deductions we have made from formula (3) and (3a). It was evident that we were dealing here with a strong conflict, because the duration of choice for the two last choices on this series was 5 and 4 seconds respectively, while on the previous choices it had been 1.2 and −.8 seconds.

The behavior of this subject might appear to be contrary to the typical changes in the level of aspiration after success and failure as described by Hoppe (9) and Jucknat (11). It becomes understandable, however, if one takes into account the more inclusive situation in which the task situation is embedded, and which modifies its meaning to the subject at that time.

It would be quite possible to follow in the same manner all of the subject's choices as she went through the remaining parts of the experiment. As this would take too much space, however, we shall discuss only some of the important changes in the psychological situation throughout the experiment.

It will be recalled that in the next task (series B) in which the pegs are arranged in a different pattern, the subjects were given success in all trials. Contrary to all expectations, this proved to be a situation full of conflict and tension for this subject as well as for several other manics. She began by choosing the easiest task again, as she had her previous failures still in mind. After the experience of complete success, in the next choice the subject needed five seconds to make up her mind which board to take. During this time she mumbled to herself, touching board No. 3 and 4 and looking up to the 5th and down to the easiest board, and finally took No. 2. The same thing repeated itself on the next two choices for which she needed six seconds each. The two observers and the experimenter agreed in their impressions (see chapter on method) that the subject had such extraordinary difficulty in making up her mind, because the experience of complete success on a task which she considered more difficult than the preceding one had been overwhelming and deeply exciting for this girl whose whole psychosis was developed on the basis of her feeling of failure in all life situations. It opened up new possibilities which were of great emotional significance to her even though they concerned only the very limited experimental situation. Each success delighted her more than the previons one had, and with each new choice she became more concerned lest she should spoil her good record. While this may seem paradoxical, we have observed that the negative valence of failure becomes stronger the less likely it becomes and the less it is experienced.

The above change of attitude implies, of course, a change in the subject's goal structure. In the A series her goal had been to accumulate as many successes as she had had failures. She still had this idea in mind when she first worked on the B series, and maintained it to some degree throughout the experiment. After the experience of success, a new goal was formed, that of "continuing to have more successes" or to "maintain her good record." The topology of the situation is represented in Figure 19 (p. 267). The subject now finds herself in a positive region, that of having successes, which she is loath to leave. Every new choice implies at least the possibility of having to leave this region as she may fail on each new task she attempts.

Nevertheless, we should expect that a person who is in the positive region of success should be less tense than a person under the frustrating experience of failure. Jucknat (11) describes that her

subjects were more friendly and relaxed and much more stable while working on the success series than when they worked on the failure series. The fact remains, however, that subject 20 as well as several other subjects gave evidence of stronger conflict while choosing a new board after complete success, than they showed in choice situations after partial or complete failure. The following consideration, we feel, throws some light upon this apparent inconsistency. A comparison of Figures 18 and 19 shows that in making a choice after failure (Figure 18, p. 267) there exists a force $f_{A,-A}$, i. e., a force away from the region in which the subject is at the time. This force acts directly upon the person as long as he remains within A. This accounts for the restlessness and tenseness which both Jucknat's (11) and our subject showed during the performance on the failure series. After success (Figure 19), however, the forces $f_{A,A}$ which constitute the conflict situation are not acting strictly within the positive region A but only on the boundary of A, that is, they act upon the person only as he is considering leaving region A.[25] This is in accordance with our observation that during the success series many of our subjects were relaxed while working on the tasks, but gave every indication of conflict when they had to make a choice, that is, when they were staying on the boundary of region A.

Figure 19 is a representation of the topology and constellation of forces during subject 20's choices after complete success. The main conflict was not which particular task to choose, but whether or not she should choose another task at all. After the successful completion of each task the subject was confronted with the possibility to make her success a "final success" by discontinuation. Success on that particular level of difficulty would be, as it were, perpetuated and she would remain in a positive region. As a matter of fact, at every choice after success subject 20 was greatly tempted to do this. Each time, however, she realized the possibility of achieving success on yet a higher level which had a much higher positive valence. On the other hand, the probability of failure is greater for more difficult tasks, and she was afraid of losing the present desirable status of "being successful."

This subject's last choice on this series which turned out to be characteristic for many subjects including normals, was quite spectacular. In spite of continual success, she lowered her level of aspiration by one step, looking upwards and downwards, and touch-

[25] See Lewin (17).

ing two of the more difficult boards. The duration of choice was thirty seconds during which she laughed in an embarrassed manner, tapped the table with her fingers, and mumbled to herself in an excited manner. There was a very definite tendency to continue to raise her level of aspiration, as evidenced by the fact that she touched several boards higher than her last one without actually taking them, but the more important concern was that now, on her last chance, she wanted to be quite sure of her success; in other words, she wanted to secure "a good exit" for herself.[26] It is interesting that she did this in an almost guilty manner, as if she felt that she ought to take the risk and take a higher one, but could not bring herself to do it, because of her intense fear of failure.

It remains a surprising fact that this subject, as well as several others, preferred to lower her level of aspiration on the last choice instead of discontinuing after the preceeding one, which would have insured a final success on a higher level of difficulty.

The following series (series C), where she was given two successes and one failure, was by far the most enjoyable one, and the one of least conflict, for this subject. She again started with the lowest task and at once returned wholly to her former goal of having at least as many, or more, successes than failures. As she continued to succeed in doing this, she raised her level of aspiration in big steps. While working on the tasks, she expressed her enjoyment several times: "I sort of like it now." "It's sort of fun when you can do it." "I haven't any time to waste, though."

Her duration of choice was rather long in this series, too, but it was the experimenter's feeling that this was due to a conflict between a certain timidity, which made her want to raise her level of aspiration in small steps, and the increase in self-confidence resulting from continuous success, which made her want to raise it in somewhat larger steps.

In the last series (series D) where the subject is given failure on all trials, this subject became discouraged immediately. She started on task No. 2, as success on a level lower than the one already attempted did not mean much to her. So she attempted the same board again. As she failed the second time she gave up with very openly expressed regrets, but without indication of any special conflict. (The duration of choice was three seconds, and she glanced neither to more difficult nor easier boards.) Apparently she did not have the feeling, so commonly found in depressives, that

[26] Hoppe (9) found the same tendency in his normal subjects.

one ought to persist in spite of failure, or that failure is a disgrace.

We wish to stress that the reaction of subject 20 is not a "typical hypomanic reaction." At the time of the experiment, she was almost completely recovered, her only symptom being overtalkativeness and an unexpectedly strong and overemotional reaction to success and failure, which she made no attempt to conceal. We have chosen this subject for a detailed analysis, because she verbalized very freely on the motives for her behavior, and thus made possible many statements which would have been hypothetical in another subject.

The effect of the experience of success or failure on one trial upon the choice of the next one has been the central problem of most previous studies on the level of aspiration. Subject 20 showed very characteristic shifts of the level of aspiration (though not all of them appear "typical" without further analysis) and her great volubility made a detailed analysis possible. For this reason we include here a schematized comparison of the relative changes in the forces determining the level of aspiration after success and failure as compared to the constellation of forces during the first "neutral" choice.

Comparison of Initial Choice With Choice After One or Several Tasks in the Failure-Success-Failure Series

Initial Choice	Choice After Failure-Success-Failure
While making the choice the subject is in a neutral region ($Va(A) = 0$)	While making the choice the subject is in a negative, failure region ($Va(A) < 0$)
By not making any choice (Disc.) the subject merely leaves the experimental region, carrying with him neither the effects of failure nor of success. Expressed in a formula this fact reads: $d_{A\text{-}Disc.} = d_{A.-fin\ Fa}$ $f_{A\ A} = 0$	Discontinuation means final failure; the only way to escape final failure is by making a further choice $d_{A\text{-}Disc.} = d_{A.-fin\ Fa}$ $f_{A.\ A} > 0$

$$Po(Fa(n))\text{initial choice} < Po(Fa(n))\text{Fa-Su-Fa series}$$

This formula expresses the fact discussed elsewhere that after the experience of failure the subject considers failure more probable, on the same task (n), than she did before.

$$Po(Su(n))\text{initial choice} > Po(Su(n))\text{Fa-Su-Fa series}$$

That means after the experience of failure the subject considers success less probable on the same task than she had done before (in spite of the occasional successes).

$$Va(Su)\text{initial choice} < Va(Su(ab,x_{\cdot}))\text{Fa-Su-Fa series}$$

The positive valence of success, on a level above the one tried before, increases after the experience of failure.

Comparison of Initial Choice With Choice After Success-Success-Success

Initial Choice	Choice After Success-Success-Success
The choice situation is neutral.	While making the choice the subject is in a positive region ($Va(A) > 0$). She not only does not wish to leave the success region but has a greater tendency to discontinue as discontinuation would make success final
$Va(A) = 0$	$d_{A,disc} = d_{A,fin\ Su}$
$d_{A,disc} = d_{A,fin\ Su}$	$f_{A,A} > 0$
$f_{A,A} = 0$	

$Po(Fa(n))$initial choice $>$ $Po(Fa(n))$Su-Su-Su series

The probability of failure on the same task is lessened after the experience of success.

$Po(Su(n))$initial choice $<$ $Po(Su(n))$Su-Su-Su series

The probability of success on the same task is higher after the experience of success than it had been before.

$f_{A,-Fa(n)}$ initial choice $<$ $f_{A,-Fa(n)}$ Su-Su-Su series

The negative valence of failure on the same task, increases after the experience of success.

Topological Analysis of Maze Experiment with a Decision Retarded Subject

Subject 52 was a twenty-five-year-old single girl, suffering from her second depression. She was very severely retarded and depressed to the point where it seemed almost impossible for her to talk or to carry out any small action without constant encouragement. She was one of the only two among our subjects of whom we felt that the retardation was accompanied by regression.[27] Her whole appearance and manner of moving, and a naïve curiosity in regard to all things surrounding her, made a childlike impression. Her speech was explosive; it took her a long time before she was able to make an answer, but when it came her voice was loud and full of emotion. Her movements were jerky and irregular. Frequently she would begin a movement, such as walking towards a table, and then suddenly stop and remain motionless until the experimenter specifically directed and encouraged her. This subject had been given the peg board test several days previously so that

[27] Subject 42 of whom this was also true was a decision retarded subject too.

she was acquainted with the experimenter and with the experimental room.

When first contacted on the ward, she seemed unwilling to follow us to the experimental room. Her facial expression was that of a person crying though there were no tears. When the experimenter simply stood at the door in a waiting posture, without further urging, she finally came. Upon entering the experimental room, the subject at first seemed very preoccupied and loath to leave her thoughts and turn towards the realities of the experimental situation. She seemed determined to co-operate, however, because she always responded to instructions at the time when they were given, but frequently forgot them later. She accepted the test as part of the hospital routine, but on the whole it was a negative field to her because it forced her into action and attentiveness.

The subject gave every evidence of being very susceptible to the social aspects of the situation. She watched both the experimenter and the observers closely and turned towards them with an expression as if she were begging for help whenever anything was demanded of her. She, like a great many of our depressed subjects, seemed to have a strong sense of the social demands in any situation as to what a person "ought to do."

In a case like this, when a subject does not talk, and when her behavior is determined much more by what is going on within the person than by the experimental situation, it is difficult to estimate the forces determining the subject's choices. Figure 20 (p. 267) shows what appear to us to be the most important forces, though there were undoubtedly some others.

In this figure we have indicated two kinds of forces, "social" and "personal" ones. By a social or induced force, we mean a force acting upon the person as the result of the powerfield of another person or group. This powerfield lends a positive or negative valence to regions which would not have this valence otherwise. In our case the region "discontinuation" possesses a positive valence as far as the subject's own feelings are concerned, but she feels that the experimenter, the nurse and other people want her to do the tasks, that she "ought" not to discontinue.

The subject considered only the tasks 6, 7, and 8, apparently because she felt that she ought to take a task corresponding to her true ability which she estimated at this level. The most striking difference between her and subject 20 is the estimate of her own ability. In spite of being severely depressed, subject 52 considered

her own ability as lying somewhere midway between the easiest and the hardest task (T^{6-8}) whereas for subject 20 it was very low. Her main conflict was, we believe, that between the social forces demanding not only that she take a board, but also that she take a fairly high one, and the forces corresponding to the person's own needs which were directed against her taking any task at all. (In the drawing the "own" forces are represented in black and the induced ones in red.) The forces corresponding to the positive valence of success in Figure 20 are small because this subject gave few signs of wanting to succeed on the tasks; she only disliked failure.

Some of the proportions of the strengths of the opposing forces can be inferred directly from the subject's behavior while others must be surmised from the result, i. e., from her actual choice. The following statement can be made with assurance: the social force away from discontinuation is greater than the personal force towards it: $|if_{P.-Disc.}| > |f_{P.-Disc.}|$. As to the rest, the constellation of forces seems to be much the same as in a typical normal case.

On first sight, the whole constellation of forces in the case of subject 52 appears to be similar to that in a normal subject. However, it must be remembered that the things which kept her from immediate discontinuation were the induced social forces. Moreover, the forces relating to success and failure on the tasks were also induced; in other words, she did not care whether or not she succeeded for her own sake, but only because she felt that the experimenter and nurse wanted her to try to succeed. As a result, she was guided largely by what she expected to happen. In the classifications of Hoppe (9) and Frank (4) she would be considered a realistic type. On the whole, therefore, we find that this very seriously disturbed subject shows a perfectly normal reaction to the level of aspiration situation. This is borne out in her further choices, as she raises her level of aspiration by one step after success and then, after what was formally a success but probably considered as a failure by her, because it had been necessary for the experimenter to help her, she lowered it again by one step. Following failure she lowered her level of aspiration twice and then raised it once, quite evidently because she felt that she ought to be able to do the higher ones, i. e., the loss of social status which was in her eyes connected with lowering the level of aspiration too much, had a strong negative valence for her.

We do not mean to say, however, that the entire behavior of this subject in the experimental situation was normal. On the con-

trary, her decision retardation interfered with the execution of even the smallest action. Her whole behavior was colored by the fact that she disliked to be in a decision situation, but at the same time every situation, however unproblematic for a normal person, became a decision or conflict situation for her. The difference in her facial expression while working on the tasks and during the pauses when she tried to answer a question or decide which board to take, was remarkable. During the working period she looked fairly relaxed though her face wore a sad and worried expression, but during the intervals she went through a variety of convulsive movements, some of which were those of a person crying, others were more imploring gestures asking the experimenter for help, and others yet appeared to be expressions of acute despair. While we are unable, as yet, to understand this subject's condition well enough to allow a full topological representation, we think that it is primarily a problem of overlapping fields. (Figure 21, p. 267)

Most psychotic patients are almost constantly in an overlapping field situation, comparable to normal persons at times of extreme preoccupation, whether painful as in anxiety for the life of a close friend, or related to excitements of a happy nature as in the case of a successful young lover. The response to one and the same physical environment should be different according to the dynamic conditions prevailing in the one field or the other. The actual response depends upon the relative potencies of the two fields.

The subject's field of preoccupation, which causes the decision retardation, has been created by a very strong conflict. This girl had an illegitimate child from a man she did not like. During the period when she was trying to decide whether to marry the man she detested, as her family advised, or to raise an illegitimate child, as she felt inclined to do, her illness commenced with a sudden and extreme retardation of the decision type. Figuratively speaking, she came to a complete standstill between two tremendously strong forces of opposite directions. It is known that when a person is in such a conflict situation between two equally strong forces of opposite direction he may cease to locomote. (See Lewin (17).) In a case like the present one where each alternative is highly unpleasant, the subject wishes to postpone the decision as long as possible; she does not want to make the decision. As the subject is constantly under the effect of this difficult situation she develops a more generalized inability for decisions. Every decision is now painfully prolonged and accompanied by serious distress.

This interpretation of the cause of this subject's hesitation in approaching the tasks and in carrying them out step by step agrees well with the fact that once she entered the level of aspiration situation, her reactions were entirely normal. It was not the task she feared, nor an extraordinary fear of failure, but just the moving away from where she is at any time: the making of a decision.

Topological Analysis of the Maze Experiment with a Motor Retarded Subject

Subject 31, a forty-six-year-old farmer, was the most severely retarded of all our subjects. He moved extremely slowly, e. g., it took him five seconds to rise from a chair, counting the time from the first movement to an erect standing position before he had made a step (the same action takes a normal person approximately .7 second). His face wore a set expression of misery and discouragement which did not change at all throughout the experiment. He did not appear to be tense or agitated at any time. Passively, he accepted all directions from the outside and seemed to have no initiative in either carrying them out or in resisting them. He was practically pushed into the experimental room where he remained standing motionless as soon as the attendant released his arm. He seemed to have no curiosity in regard to the tasks or the people in the room, and complied with all instructions in the same indifferent manner. There can be little doubt that the region of performing the tasks had a negative valence for him because it forced him to move about and pay attention to things outside of himself which he found very difficult to do. It was also quite clear that he was thinking about his own troubles most of the time, as he gave many signs of preoccupation throughout the tasks. For this reason, we have represented the situation before the subject made his first choice, i. e., before he had entered the experimental region, as a situation of overlapping fields (Figure 22, p. 268). It was only because of the social pressure exerted by the experimenter ($if_{P,T}$) that he entered into the experimental region at all. We know much less concerning the nature and content of the field of preoccupation for this subject than we did in the case of the decision retarded one. We do know, however, from statements which this subject made under the influence of sodium amytal, and after he had improved enough to introspect about his feelings, that he thought he had committed the unpardonable sin, that he was doomed to die, and that every effort on his part to enter normally into activities with other peo-

ple, would make matters worse because others would be contaminated by contact with a person as wicked as he. The sin he considered unpardonable was masturbation, and he thought that by this action he had become the murderer of millions of little children who otherwise could have been born. From this we can conclude with some assurance that for this subject more or less every region in the environment had a negative valence, and his only desire was to be left alone with his horrible thoughts. In the representation of the field of preoccupation, we have therefore assigned a negative valence to all regions. The only force is $f_{A,-nonA}$ whereby A represents the region in which the person is at the present. This force, then, represents the tendency against any locomotion. This representation to some degree resembles that of the decision retarded subject (Figure 21, p. 267), and indeed they both have in common a strong resistance against locomotions of any kind. Subject 31 is not in an acute conflict situation: however, he does not have to make a decision, but he is surrounded only by negative valences, which put him under great pressure.

As has been described before, one of the most outstanding differences between the decision retarded and the motor retarded subjects was that the former were tense, agitated and very directed in their actions while the latter were lethargic and apparently lacked all purpose. This difference is in keeping with our representation of the fields of preoccupation in Figure 21 and Figure 22. For the motor retarded subject who is surrounded by negative valences the predominating force is $f_{A,-nonA}$, that is, the force against leaving the region in which he is. This force can be represented only by borderline forces. These forces do not act upon the person immediately as long as he remains in A, but only when he attempts a locomotion from A to nonA. In the case of the decision retarded subject, however, we are dealing with a conflict between two driving forces which act immediately upon the person, even while she is in region A. According to the more systematic treatment of this problem by Lewin (17) it is logical to expect that the person in a conflict between two driving forces should show a great deal of tension, while where we are dealing with borderline forces, friction is to be expected only when the person crosses this borderline.

In a case like this, where the subject is almost mute and shows no change in facial expression, it is practically impossible to arrive at an estimate of the forces determining his choices. We therefore do not offer a topological representation of the choice situation.

Whatever we know concerning the forces determining this subject's level of aspiration, we learned from his introspections.

We reproduce excerpts from his introspections after the maze and peg board experiments not only for this reason, but also because they give a very good impression of the mood characteristic of the motor retarded subjects.

Question: When you went to the table for the first time to choose a board, do you remember why you took the one you did?

Answer: (long pause, then in a whisper) You said I could take the one I wanted.

Question: Yes, it was perfectly all right to take that one. But do you remember why you wanted that one rather than any one of the other boards?

Answer: (long pause) I couldn't exactly tell.

Question: Would you have taken this big one up here (pointing at 11) just as soon?

Answer: (long pause) No, not the big one.

Question: Well, there must have been some reason for your taking this one, then. Is it, perhaps, that you know what the reason was, and that it is kind of hard to tell me about it?

Answer: I suppose there was a reason.

Question: When you could not do some of them in time, did it make you kind of annoyed or did it make you want to do them right?

Answer: No.

(The following questions and answers relate to instances in the maze experiment when this subject raised his level of aspiration after failure.)

Question: And then, when you found you couldn't do that one, you went back to take another one. Do you remember, then, why you took the one you did?

Answer: I took a higher one, didn't I? (This again in a whisper after long pause)

Question: Yes, it was perfectly all right to take that one, but I just wondered why you took this particular one.

Answer: (Very long pause, answer for the first time is not audible, second time still in a low whisper) You have to keep on trying.

Question: And then you took another one, again a higher one. For the same reason?

Answer: Yes, ma'am.

Question: When you were working on those over there (failure table) did you sometimes feel that you would have liked to stop, but just went on anyway?

Answer: (Long pause, whisper) You have to keep on trying.

Question: Then you decided to stop on that task, and went

over to the other table and chose one of those mazes. Do you remember what made you take the one you did?

Answer: (Whisper) The first one would have been too easy.

Question: And then you couldn't do that one (the first two choices from the success table were failures because the subject gave up) and went to take again a higher one, for the same reason, I take it.

Answer: (Subject nods his head)

Question: When you couldn't do those, did you think that perhaps you might take an easier one instead?

Answer: (Very long pause during which subject looks more than usually uncomfortable. Finally in a whisper) I suppose so, but you have to keep on trying.

Question: Which table did you like better to work on?

Answer: It didn't make no difference to me.

From these excerpts and the general behavior of the subject we conclude that this man attaches no positive valence to success, nor does he fear failure to any appreciable extent. He is strongly aware of the social demands inherent in the situation, i. e., he knows at about which level his achievements ought to lie, and his choices are directed by this more general standard. Strangely enough, therefore, this subject is realistic in his choices just as was the equally disturbed decision retarded subject 52. The subject's further choices were determined almost entirely by the sentiment, "You have to keep on trying," which seems to be very prominent among depressed patients.

It is rather common for normal persons who are in a state of distress to, as it were, encapsulate themselves (See Lewin (17, p. 95)) and thus cut themselves off from the world around them. In such cases the overt behavior of the person is frequently ruled by a narrow field, his immediate surroundings. The remarks of subject 31 convey the impression that the painful character of his life situation at large has caused the field guiding his momentary actions to shrink, particularly in regard to time perspective. He is determined almost entirely by the psychological present. While the normal person is guided largely by what he expects to be able to do, this subject is determined by what he thinks he ought to be able to do.

Topological Analysis of the Peg Board Experiment With a Nonretarded Depressed Subject

Subject 60 was a forty-one-year-old single woman suffering from her first depression. She accepted the experiment as a part of the

hospital routine, though she stated freely that she considered it "rather a bother." She entered the experimental situation in a perfectly normal manner, concealing her lack of interest rather inadequately behind a courteous and quick response to all directions. Her expression was sad and tense, and her face reflected her every change in mood. Her eyes were red from crying and she wrung her hands in a nervous manner.

In her case, it was the social pressure that caused her to enter the experimental region at all, as she was not interested in the tasks and did not seem to think that she could gain or lose anything in working on them. After her first choice, the task even assumed the character of a barrier. In this case (represented in Figure 23, p. 268) the subject was not primarily interested in succeeding on the tasks, or in avoiding failure, but her main goal was to be done with the test as quickly as possible without being uneo-operative. During the choice subject 60 was in part determined by the forces ordinarily active in this situation, and in part by the more dominant goal of getting through the tasks quickly. The quickest way of getting through with the tasks would obviously be to choose always the easiest task. Actually the subject chose the same level of difficulty on each series, though not the lowest one. This indicates that the social force which prevented her from discontinuation also prevented her from choosing a level definitely below her ability.

In the case of this subject, then, it cannot be said that she was determined predominantly by the reality factor, since she did not take the highest task on which she believed herself capable of succeeding, nor was she determined predominantly by her fears and hopes in regard to success and failure; her choices were instead determined by a goal that lay outside the experimental situation, namely, to get through the test as speedily as possible.

One should expect that a subject who does not take the experiment very seriously and who never makes more than one choice in a series would not react very strongly to success and failure. In reality, however, subject 60 showed a strong response to both. She smiled and seemed pleased after success and frowned, became embarrassed and obviously irritated after failure. In spite of the fact that we generally use the emotional expression as one of the main symptoms for the intensity of success and of failure, in this particular case we believe to be justified in considering her display of emotionality as very superficial,[28] showing her readiness to "play

[28] Often superficial anger is expressed more readily than deep. Dembo (2).

the game'' and behave as is expected of her rather than any real involvement.

On the whole, therefore, we can find nothing abnormal in the subject's behavior in regard to the level of aspiration situation. Any normal subject might have done the same if he were obliged to take a test which did not interest him. As subject 60's behavior is characteristic for that of all other nonretarded subjects, we cannot ascribe this to chance, but must consider it typical. It will be remembered that also in the statistical analysis the nonretarded group was closer to the normal than any of the other types of depressives. This is so, in spite of the fact that all of the nonretarded subjects were seriously ill and very deeply depressed. It seems that in this group of depressives the disturbance affects only the mental content, but not the other psychic functions. It reminded us somewhat of one type of paranoid condition when the patients are likewise greatly disturbed in one sphere, that of their fixed delusions, but may pass for normal in all other respects.

DIFFERENCES IN THE ONSET AND COURSE OF THE ILLNESS IN MOTOR RETARDED AND DECISION RETARDED SUBJECTS

In an attempt to understand the nature of motor retardation and decision retardation as fully as possible, we investigated the circumstances surrounding the onset and the course of the illness for each of our subjects. We found that in our three cases of decision retardation the depression developed in response to a very definite environmental conflict. The case of subject 52, which was discussed in Chapter V, is a good example. It is of interest in this connection that this girl, who developed a severe depression while attempting to decide whether to marry a man she disliked or to raise an illegitimate child, and who was ill for more than four months, recovered fully within three weeks after she had been informed of the death of her baby. We consider this a proof of the fact that her illness developed in relation to the difficult conflict situation in which she was placed, for she recovered as soon as the death of the baby relieved her from the necessity of choosing between two extremely unpleasant alternatives.

Not all of our cases are equally clear cut, and in the following we give some more examples of conflict situations accompanying the onset of decision retardations.[29]

[29] Cases 1 and 3 are experimental subjects; Case 2 is taken from a record.

1. A thirty-four-year-old Catholic woman who had been in love with a man of a different faith and had a child from him, was forced by her family to marry a Catholic man. She developed a depression soon after her husband changed his religion and joined the church to which her former lover belonged. In psychiatric interviews she stated that she felt her sacrifice had been in vain; and if it was all right for her husband to change his faith, it would have been all right for her to do the same and marry the man she wanted.

2. A twenty-one-year-old married man was promoted to a more responsible position. Very shortly before the onset of the illness, the store in which he worked, was robbed. Immediately after this, the patient became at first less efficient and later incapable of working, due to extreme indecision which reached the point where it took him five minutes before he was able to answer a simple question, and where he was incapable of deciding which food to eat, which clothes to wear, etc., etc. In psychiatric interviews, under the influence of sodium amytal, the patient related that as a young man he himself had stolen some money from a store. He had never been apprehended, and at the present time he felt afraid that his superiors would find out about it and discharge him. This subject recovered very suddenly, from one day to another, while visiting with his wife on a one-day parole from the hospital.

3. A sixty-year-old married woman developed a decision retardation after the following three things had happened within three weeks. Her favorite brother committed suicide; her mother died unexpectedly; a sister sued the patient, claiming that the latter had stolen some of their mother's belongings before the auction which was to benefit all of the siblings.

As is evident from these examples, the environmental difficulty leading to the depression was not always the necessity for a decision. Extreme feelings of guilt (as in case 2), or regret (as in case 1), or simply the accumulation of distressing events (as in case 3), may bring on the illness. No such environmental trouble was discovered in the history of any of our motor retarded subjects.

In order to find out whether this is merely a chance result or whether we are dealing here with a real distinction, we abstracted in detail twenty cases of manic-depressive depressions, chosen arbitrarily from a list of all manic-depressive patients who had entered the Iowa Psychopathic Hospital in 1936. We used only records that were detailed enough to permit a classification into the five types of depressions which we used in our analysis. Table 11 indicates the results of this study, together with the same information concerning our experimental subjects. The number of subjects is too small and the method of determining the type of retardation too crude, to allow of any definite conclusions, but the fact that even in a small random sample the presence of environmental conflict so definitely correlates with a certain type of retardation, strongly suggests a causal relationship between these factors.

TABLE 11

PERCENTAGES FOR THE PRESENCE OF EMOTIONAL CONFLICT PRECEDING THE ILLNESS AND FOR SUDDEN RECOVERIES FOR BOTH THE EXPERIMENTAL SUBJECTS AND THOSE WHOSE RECORDS WERE ANALYZED IN REGARD TO THESE ITEMS

Group	Subjects	Per Cent of Cases	
		Environmental Conflict	Sudden Recovery
Decision retarded	7	85	28
Motor retarded	4	0	0
Motor and decision retarded	11	27	0
Nonretarded	12	50	0

It may be of interest to outline the circumstances under which some of the typical motor retardations developed. Subject 31 (see Chapter V), e. g., developed his first depression following an attack of flu, and his second depression ten years later following a slight heat stroke. Another subject very gradually developed a motor retardation after a person suspected of having tuberculosis had drunk from his coffee cup.

Motor retardations are found, of course, not only in manic-depressive psychoses but also in several other mental disturbances, notably catatonic schizophrenia and postencephalitis in adults.

If our impression in regard to the relationship between the presence or absence of environmental conflict and the type of retardation is correct, we may say that the decision retardation appears to resemble psychoneurotic mechanisms of dealing with difficult life situations, while motor retardation is more like an organic illness.

Differences Related to the Degree of Retardation

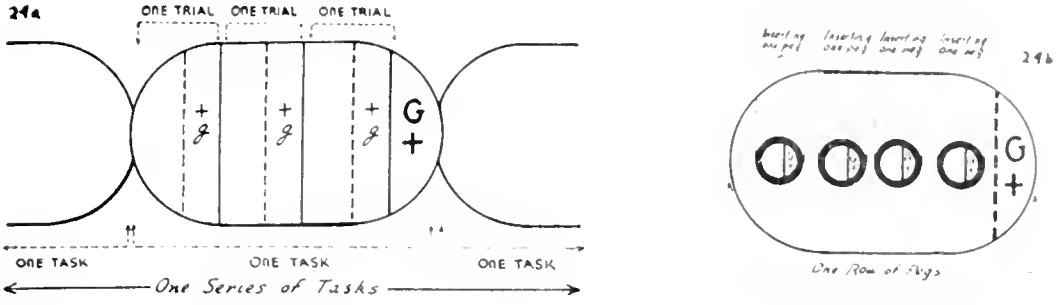
Some of the effects of extreme retardation upon the subject's behavior in the level of aspiration situation, are related not so much to the type of retardation as to the degree of such disturbance.

With some of our very disturbed patients, perhaps the most outstanding thing was that they did not seem to think or act in units of normal size. Subject 57, e. g., who was severely decision retarded, needed a special decision period for each very small particle of what seemed one unit of action to us. For instance in solving the mazes, she would grasp the pencil, then make a pause, then

pick it up and pause again, then move it to the paper, pause again, make a line along half of one path, pause again, etc. This was even more noticeable in the peg board experiment when taking one peg, and putting it into the board, seemed to be a separate action each time, totally unrelated to the preceding and the subsequent action of inserting a peg. The same phenomenon was observed in subject 31 (motor retarded) who did not stir when he was asked, "Please, get up and get the board from the table in the far corner of the room." But when the experimenter asked him, specifically giving each part of the directions after the preceding step had been carried out, to please get up, turn around, walk towards the table in the far end of the room, take the board, and bring it back to his seat, he accomplished the action without much difficulty.

The same thing happens to normal persons under the influence of extreme fatigue or psychological satiation. (See Karsten (12).) Words and actions lose their meaning because the units break up into small parts, the structure and organization of the field disintegrates. This phenomenon has been called by Karsten (12) *Gestaltzerfall* (disintegration of wholes).

In order to have a level of aspiration and to experience success or failure, a person must be able to maintain a certain hierarchy of goals. There must be one larger goal, such as "to do as well as possible on the tasks," and several subgoals, such as succeeding on specific levels of difficulty, which must be kept in a certain relationship to the main goal. This presupposes the maintenance of certain "natural" units of action. We define a unit of action by saying that a natural unit of action shows a higher degree of unity from its beginning to its end than with other parts of the larger activity of which it is a part. To be more concrete: The three trials on each board (one task) are normally one action. The instructions are worded in such a way as to set up one goal for the three performances together. The goal for this unit is success on each trial (in some cases it may also be to succeed on at least one of them). Within this larger action (task) each trial is in itself a unit of action to a higher degree than is the total task. The beginning of one trial and the end of performance on the same trial are more closely interdependent than the beginning of one trial and the beginning of the next. Normally, each trial is the smallest unit of action, and there is, psychologically speaking, no further differentiation into rows or individual pegs (which, physically are still smaller subunits). In our severely retarded subjects, however, the



Normal Structurization

Disintegrated Structurization

Figure 24. Disintegration of Normal Units of Action in Retarded Subjects
The normal person is able to maintain a hierarchy of goals and subgoals related to certain "natural" units of action which in the peg board experiment seem to consist of such units as a complete series of trials, a complete task, an individual trial within one task. The retarded subjects often had no unit larger than a single row of pegs within one trial, and an even more common unit with them seemed to be the discrete act of picking up and inserting a single peg. With such a disintegrated structurization of the field we could hardly expect the subject to experience success and failure in regard to performance demanding larger units of action.

interrelation of these parts of the action as a whole was greatly changed or even lost sight of. Figure 24 represents schematically the difference between a normally integrated structurization and disintegration on the peg board experiment.

It is obvious that a person for whom each row of pegs represents an entirely different action cannot experience success or failure in regard to the performance on the board (task) as this performance hardly exists as a whole for him. Such lack of appreciation and reaction to success and failure was exactly what we found in our most severely retarded subjects. They did not show any difference in their behavior after success and failure: sometimes they continued the movement of picking up pegs and putting them into the holes after the board was filled, apparently unaware of the fact that they had completed the trial; they never knew whether or not they were expected to try a certain board over again, indicating that for them the three trials on one board were not at all related to each other. In other words, for these subjects the structure of the task had changed from a task with a *definite end* to one with an *indefinite end.* (See Zeigarnik (24).) Karsten (12) found disintegration of larger units of action in states of psychological satiation. Barker, Dembo, and Lewin [30] found a similar dedifferentiation or regression to more primitive levels of action in situations of great pressure or tension. Such a disintegration of the field was ob-

[30] Lewin, Kurt, Dembo, Tamara, and Barker, Roger: Experiments in frustration and regression in children. Unpublished study.

served in decision retarded and in motor retarded subjects. This leads us to consider this phenomenon as related to the degree rather than to the type of retardation.

THE RELATIONSHIP BETWEEN OUR FINDINGS AND SOME OF THE SUGGESTED THEORIES OF ABNORMAL AND NORMAL MOOD CHANGES

Euphoric and Depressed Moods in Normal Subjects

Johnson (10) of Stanford University has published a most interesting experimental study of mood changes in normal subjects. On the assumption that normal mood swings differ from abnormal ones in degree rather than in quality, she tested her subjects for most of the behavior items which have been found to differentiate manic from depressed patients. She found that in each case the difference between normals in a euphoric and in a depressed mood lies in the same direction as the difference reported between manic and depressed patients. Some of her specific results are of interest to us, because they measure the same or very similar items as those reported in our study.

She measured the speed of decision, for instance, and found that it was longer for her subjects in the depressed state than in the euphoric one, and that almost all of the subjects reported a feeling of indecision and conflict as accompanying their depressions. It was of great interest to us that this author was able to distinguish two types of depressions, roughly corresponding to our motor and decision retardations, among her normal subjects. She states: "It seems a defensible hypothesis that there are here involved different types of depressions. One is the more usual apathetic depression; the other analogous to the agitated depressions of psychoties." (p. 195)

Johnson (10) interprets the depressed and euphoric states, both normal and abnormal, in terms of the expansion and retraction of the ego. She feels that increase in mental and physical energy, shorter association time, decisiveness, pleasant feelings towards others, and a mental content directed towards the present and the future, are descriptive of a state of ego expansion, while the opposite feelings correspond to the ego retraction. This is a stimulating hypothesis, but we do not feel justified in accepting this formulation for abnormal mood swings as it stands, because there are too

many behavior characteristics of manic and depressed patients that seem to point in a different direction. Thus, we found our depressed subjects to be more susceptible to social components of the experimental situation. They reacted to the experimenter and to generally accepted social standards of behavior much more strongly than any of the manic subjects. Moreover, we know that depressives are self-centered not only in the sense of wanting to be alone with their thoughts and avoiding contact with reality (which reaction is much more characteristic of schizophrenic states), but in the sense that all things on the outside are related to their own particular worries. They feel that other patients cannot be cured because they themselves take too much of the physician's time, or even that some terrible fate will befall humanity because of their evil deeds. These trends may be interpreted as a kind of ego expansion, so that we prefer not to formulate our findings and impressions in terms of this concept.

Another point where our observations disagree with Johnson's (10) findings concerns the regressive tendencies of thought. She finds that free associations bring out a much higher percentage of responses related to childhood events, in the depressed state than in the manic one. While we have no quantitative data on this point, we have gone over all statements that the subjects made during the experiments and have taken all references regarding the mental content of the subjects that were to be found in the hospital records. From these sources it seems to us that manic patients have a decided tendency to talk about previous experiences, especially painful ones,[31] and mention the future rarely and in a vague and superficial manner. The depressives, on the other hand, always appear to be much aware of the future. One of the outstanding symptoms of depression is hopelessness. Depressed patients feel that the future has nothing in store for them, that they are going to be sent to a penitentiary as a punishment for their sins, that they are going to burn eternally in the fires of hell, etc. Very frequently it is this fear of the future which seems to cause pronounced suicidal tendencies. It is, of course, equally true that depressives have a tendency to brood over past events and to blame themselves for past mistakes. These past events, however, have a very real connection to the present or future in the mind of the depressed patient. It is because of his past sins that he has to suffer now. In

[31] Schilder (20) has made the same observation though he draws entirely different conclusions from it. (See p. 205.)

the manic, on the other hand, there is no such close relationship between the past events about which they talk and the present or future. The reason for their remembering these things appears to be that past failures and disappointments are still painful to them, i. e., the conflict has not been entirely overcome.

While we do not feel justified in drawing any conclusions from these observations, we think that they indicate a need for caution in applying terms like "regression" and "ego expansion and retraction" in the description of mood swings.

Our Findings in Relation to Some Theories on the Manic-Depressive Psychoses

Our study was not set up for the development of a theory of the manic-depressive psychosis, but only to compare the behavior of the two extremes of mood disturbance in a specific situation. Nevertheless, the assumption of anyone of the theories outlined in Chapter I would lead us to expect a certain behavior in the level of aspiration situation.

If MacDougall's (18) theory of the predominance of self-assertive tendencies in the manic state, and submissive tendencies in the depressive state were correct, we should expect very little conflict over decisions in the extreme euphorias and depressions, as the tendencies opposed to the dominant ones would not become active at all (See p. 205 for discussion). In reality, however, we found that the amount and severity of conflict depends upon quite different factors.

The theory advanced by Henderson and Gillespie (8) (See p. 205 for discussion.) that the manic state is the fulfillment of a long repressed wish, and the depression develops if strong guilt feelings were attached to the wish, does not agree with our observations. Both quantitatively and qualitatively we have found that manic patients are tremendously afraid of failure and will go to any length in attempting to avoid it. This, as well as the fear and combativeness, so frequently encountered in manics, hardly corresponds to the elation over the reaching of a goal. In addition, we have been unable to find a situation corresponding to wish fulfillment or to the fulfillment of a wish to which guilt feelings were attached, prior to the development of the psychosis, in any of our cases. We have found, however, in both manic and depressive histories situations of frustration, of undue environmental stress, and of specific conflicts.

We feel unable to relate the psychoanalytic theory of manic-depressive psychoses in terms of libidinal regression to our study because in manic-depressive patients we observed no behavior that could be considered indicative of a regression to the oral or anal stage of libidinal development.

However, our findings may have some contribution to make to the psychoanalytic description of personality organization during the manic-depressive psychoses. As discussed earlier, psychoanalysts feel that during the depression the patient's "super-ego" is extraordinarily dominant and as it were, punishes the ego. We have found every indication of the presence of a strong super-ego in our depressed patients. Their susceptibility to the social elements of the experimental situation and the fact that they forced themselves to "keep on trying" when they should have liked not to do the tasks at all furnishes good illustration for this fact. In the manic state, as the psychoanalysts see it, the super-ego is identified with the ego, and the latter may express itself unhindered. Our observations rather disagree with such a view. The fact that the manics were so greatly afraid of failure, and so conscious of any possible disapproval from the experimenter indicate, it seems to us, the presence of an active if not normally effective super-ego.

White's (23) description of the manic phase as a "flight into reality" coincides very well with the behavior observed by us. It takes into account the fear of being hurt, the necessity of constant activity in an effort to "run away" from the dissatisfaction prevailing in any region where the patient may be, and at the same time the euphoria, the at first very high estimate of one's own abilities, which drops to a very low level after the first encounter with failure.

SUMMARY

The shifts of the level of aspiration under the effect of success and failure were measured for sixteen manic, twenty-four depressed, and thirty-eight normal subjects. In one of the experimental situations the subjects chose from a series of paper and pencil mazes arranged in the order of difficulty. They were given failure on as many mazes as they took from one entire series and success on all of their choices from another series of mazes. In the other experimental set-up we used twelve peg boards which were graded in size, and the subjects were made to experience varying degrees of success and failure on different series of tasks. The

subject's choice of a task on a given level of difficulty was considered his momentary level of aspiration.

Considerable differences in the behavior during the experiment were found to be related to the state of the person. Hypomanic subjects entered the experimental situation freely, had a high beginning level of aspiration, but were very labile in shifting their level of aspiration in both directions. They seemed abnormally sensitive to both success and failure. Manic subjects were often too distractable to maintain a goal idea; they sometimes refused to attempt the tasks for fear of failure. Their level of aspiration was labile, but typically low on all but the first choices.

It was found that the different conditions commonly grouped together in psychiatric diagnoses as manic-depressive psychosis, depressed type, may correspond to psychologically different states. Retardation, one of the cardinal symptoms of depression, may be of two types: (1) motor retardation which consists in an inability to perform motoric functions at a normal speed, and (2) decision retardation which consists in a pronounced difficulty in arriving at any decision, not accompanied by a similar slowing down in the execution of the action once decided upon. On the basis of our qualitative observations the depressed subjects were classified into five groups: decision retarded, major decision retarded, decision and motor retarded, motor retarded, and nonretarded. Quantitative measurements of the speed of decision and the speed of movement support this qualitative distinction. An investigation of the circumstances surrounding the onset of the illness and of the course of the illness revealed a pronounced difference between the motor retarded and the decision retarded group. Decision retardation developed in connection with an environmental conflict of central importance to the person in almost all cases while no such environmental conflicts could be found in the histories of any of our motor retarded subjects.

The subjects' behavior in the level of aspiration situation was found to depend (aside from the state of the person) also upon the meaning which the experiment had for them. Three important cases, that of the experiment as a pleasant field, an unpleasant field, and as a means to an end were discussed in detail.

Comparing the manics with the depressives as a whole group (disregarding the different types of retardation), it was found that the manics had a greater mobility of the level of aspiration and a shorter duration of choice. They are more sensitive to success and

failure and particularly to failure, in as far as the effect of success and failure is more directly reflected in their overt behavior and in the shifts of their level of aspiration. The depressives may be equally affected by success or failure, but their choices appear to depend to a very high degree upon such factors as duty and accepted social standards (what a person "ought to do") and are therefore less directly dependent upon the experience of success and failure on the tasks.

The duration of choice as an index for the severity of conflict was proved valid by the fact that for all groups of subjects the duration of choice in cases where fluctuation had been observed was much longer than the duration of choice in cases without fluctuation. Among the different types of retardation all indications of the presence of conflict were marked for the decision retarded subjects and least marked for the motor retarded ones. The nonretarded depressives more closely approached the normal reaction than any other group.

One of the reasons why the level of aspiration presents a particularly difficult problem lies in the fact that in this behavior we are dealing with a combination of cognitive problems related to the realistic judgment of one's own ability and of the difficulty of the task on the one hand, and with problems of values, needs, and goals on the other hand. We believe that a step towards the solution of this problem can be made by taking into account the element of time perspective, especially wishes and expectations in regard to the psychological future (reality and irreality levels in the psychological future). It is possible to correlate certain values of potency to the subjective probability of success and failure on each task. Whether or not the subject chooses another task or discontinues, as well as the actual choice, depends upon the interaction of the following factors: the strength of the positive and negative valences attached to success and failure on each level of difficulty, the subject's estimate of the probability of success and failure on each level of difficulty, and the strength of his desire to discontinue.

REFERENCES

1. Beck, Samuel J.: Introduction to the Rorschach method. Amer. Orthopsychiat. Assoc. Monog., 1937, No. 1, Pp. xv, 278.

2. Dembo, Tamara: Der Ärger als dynamisches Problem [Anger as a dynamic problem]. Psychol. Forsch., 1931, 15, 1–144.

3. Frank, Jerome D.: Individual differences in certain aspects of the level of aspiration. Amer. J. Psychol., 1935, 47, 119–128.

4. Frank, Jerome D.: The influence of the level of performance in one task on the level of aspiration in another. J. Exper. Psychol., 1935, 18, 159–171.

5. Frank, Jerome D.: Some psychological determinants of the level of aspiration. Amer. J. Psychol., 1935, 47, 285–293.

6. Frank, Jerome D.: A comparison between certain properties of the level of aspiration and random guessing. J. Psychol., 1937, 3, 43–62.

7. Gould, Rosalind: An experimental analysis of "level of aspiration." Genet. Psychol. Monog., 1939, 21, 3–115.

8. Henderson, David K., and Gillespie, R. D.: A textbook of psychiatry: For students and practitioners. London: Oxford University Press, 1932. Pp. xii, 595. (p. 121-122)

9. Hoppe, Ferdinand: Erfolg und Misserfolg [Success and failure]. Psychol. Forsch., 1930, 14, 1–62.

10. Johnson, Winifred Bent: Euphoric and depressed moods in normal subjects. Part I and II. Character & Personality, 1937-1938, 6, 79–98; 188–202.

11. Jucknat, Margaret: Leistung, Anspruchsniveau und Selbstbewusstsein. [Achievement, level of aspiration, and self esteem]. Psychol. Forsch., 1937, 22, 89–179.

12. Karsten, A.: Psychische Sättigung [Psychical satiation]. Psychol. Forsch., 1928, 10, 142–254.

13. Koffka, Kurt: Principles of gestalt psychology. New York: Harcourt, Brace, 1935. Pp. xi, 720.

14. Levy, David M., and Beck, S. J.: The Rorschach test in manic-depressive psychosis. Amer. J. Orthopsychiat., 1934, 4, 31–42.

15. Lewin, Kurt: A dynamic theory of personality. Trans. by Donald K. Adams and Karl E. Zener. New York: McGraw-Hill, 1935. Pp. ix, 286.

16. Lewin, Kurt: Principles of topological psychology. Trans. by Fritz and Grace Heider. New York: McGraw-Hill, 1936. Pp. vii, 231.

17. Lewin, Kurt: The conceptual representation and the measurement of psychological forces. Duke Univ. Series, Cont. to Psychol. Theory, 1938, 1, No. 4, Pp. 247.

18. McDougall, William: Outline of abnormal psychology. New York: Scribners, [c. 1926] Pp. xvi, 572. (p. 356)

19. Rorschach, Hermann: Psychodiagnostik: Methodik und Ergebnisse eines Wahrnehmungsdiagnostischen Experiments. Bern: H. Huber, 1932. Pp. 230.

20. Schilder, Paul: Introduction to a psychoanalytic psychiatry. Trans. by Bernard Glueck. New York: Nervous and Mental Disease Publishing Co., 1928. Pp. ix, 178. (p. 139)

21. Studman, L. Grace: Studies in experimental psychiatry: V. "W" and "F" factors in relation to traits of personality. J. Ment. Sci., 1935, 81, 107–137.

22. Tolman, E. C.: The determiners of behavior at a choice point. Psychol. Rev., 1938, 45, 1-41.

23. White, William A.: Outlines of psychiatry. 14th ed. Washington: Nervous and Mental Disease Publishing Co., 1935. Pp. vii, 494. (p. 159)

24. Wright, Herbert F.: The influence of barriers upon strength of motivation. Duke University, Cont. Psychol. Theory, I, No. 3, p. 143.

25. Zeigarnik, Bluma: Das Behalten erledigter Handlungen [On the recall of completed and uncompleted activities]. Psychol. Forsch., 1927, 9, 1–85.

APPENDIX TO PART TWO

FRIENDSHIP BLANK

1. If you were asked to pick your four best friends in this grade to work with you on a project whom would you choose?
   1. ..... 3. .....
   2. ..... 4. .....
2. In every group there are certain people with whom it is harder for us to work. What four people in this grade would you least like to have work with you?
   1. ..... 3. .....
   2. ..... 4. .....
3. If your assignment for tomorrow is to look up some references in the library with one other partner, whom do you choose for your partner?
   .....
4. You have a sled which is just right for two people to sit on. Whom would you pick to go sliding with you?
   .....
5. After school of course you have time to play at home. Now think carefully and write the names of the persons you play with most. They do not need to be in this class. First write the name of the one you play with most, then next, and next.
   1. ..... 3. .....
   2. ..... 4. .....
6. What are the names of your two best friends in the ..... grade?
   1. ..... 2. .....

OBSERVATION TECHNIQUES

Observing Social Interactions

Record by means of symbols (see p. 70) the interactions between the five children and between the children and the leader in terms of the criteria listed below. Distinguish between *initiated* social actions and actions of *response* such as compliance, resistance, ignoring, etc.

Ascendant Actions (↗) (A modification of Jack's (54) criteria)

1. Verbally attempts to secure materials from companion.
2. Forcibly attempts to secure materials from companion.
3. Verbally attempts to direct companion's behavior.
4. Forcibly attempts to direct companion's behavior.
5. Forbids, criticizes, reproves.
6. Expresses rivalry with comparison to own personal advantage.
7. Makes aggressive demands for attention.
8. Verbally "destructive" approaches (i. e., sarcasm, belittling).

Submissive Actions (↘)

1. Asks for direction of behavior from another.
2. Remarks showing recognition of own inferior status (in ability, strength, etc.).
3. *Asking for permission* to participate rather than *offering* to participate.
4. Compliance to ascendant approaches.

Objective, Matter-of-Fact Actions (→)

1. A "non-ego-involved" action in the sense that there seems to be no implication of attacking or defending status in relation to someone else (i. e., no attitude of "I'm better than you" or "I envy you" or "I'll pull you down to my level.")
2. Impersonal and unemotional in character.
3. Expresses a predominant interest in the product, the activity, rather than in the social relationship involved.

Purposeful Ignoring of Behavior (o)

To be recorded only when it is clear that the social approach has been perceived and thus that the lack of response is a purposeful ignoring rather than a question of not having heard or felt the approach.

An Interaction Chain

1. A series of interactions related by a similar verbal focus (content).
2. A series of interactions related to each other as the perseveration of the influence of one initiating approach.
3. The end of the chain should give the observer the feeling that something is settled or left unsettled as the focus of interactions moves on to something else.

Observing Group Structure

Subgroup Organization

In general, subgroups may be regarded as existing because of (1) the binding factor of an activity, or (2) the binding factor of social attraction (i. e., to be with friends, to follow a leader, etc.). Both factors are functioning in most situations. For our purposes here we will study activity groupings, and also conversation groupings (stenographic record). As the criterion for regarding part or all of the members as a particular activity subgroup we will take — interdependence of function of the members in relation to one phase of the larger group activity. These groupings will vary in unity from (1) same activity and practically no interdependence of members, to (2) the same activity and almost complete interdependence of function.

> Example of (1): a group of three children sitting side by side cutting up strips of paper for making papier mâché, showing little interest in each other's work.
>
> Example of (2): a group of three children pouring plaster of Paris into a mould, one child pouring, one holding the partitions to keep the plaster in, and the third smoothing out the plaster evenly. The presence of each is essential to the ongoing activity.

Record this subgrouping for each minute, and major changes within the minute, by giving children in the same grouping the same subgroup number (see picture, p. 70). Use the symbol (0) for a person working by himself and the symbol (—) when a member is "loafing" out of the field of activity.

Information about Subgroups

1. Record by a brief comment the activity goal of each subgrouping.
2. Record whether the subgrouping is formed spontaneously by the members or whether it is initiated by the adult leader.

3. When time permits, make remarks about the attitudes of the members toward the work they are doing.
4. By using the criteria for *unity* and *potency of interest* (see below) make ratings whenever possible on subgroup unity and interest.

Member Activity Analysis

Observe the group activity with two points of view uppermost, (1) the group as composed of five *interdependent* subparts, and (2) these five subparts as children with *individual* reactions to the situation.

Group Unity

Make ratings on the five-point scale every time you detect a significant shift in group unity on the following scale.

1. No interdependence of members as far as activity is concerned, no group seems to exist.
2. Very low interdependence of member functioning but not completely parallel activity. Change or cessation of activity of one member has very little effect on the other members of the group.
3. Co-operation to the extent of not duplicating function or conflicting in activity function. Some "we" feeling but no great loss if a member drops out.
4. Good co-operation, clearly a group moving together toward a goal, very hard for any member to leave without creating noticeable loss in the function of the group.
5. A very high degree of interdependence of member function, co-operation of all members. Activity of each member is very incomplete when considered by itself without relation to that of the other members.

Member Interest

Make ratings of the interest of the different members in the club activity on which he is working, using the following scale as a guide:

1. The activity has no valence for the member. He tries to leave the field and engages in other diverting activities.
2. The group goal activity is secondary to some other individual preoccupation. Easily diverted by outside disturbance.
3. The group activity is primary, but a conflict of interests can be detected by noting a cut-up attention span with frequent activity deviations.
4. Member is well involved in the group activity, shows a definite positive interest and gives evidence of enjoyment.
5. Animated, intense interest with resistance to stopping the activity. Very difficult to divert attention. Little talk that is not centered on the activity.

Stenographic Account

Take special care not to "take dictation" from any one child or subgroup of children. Give each member "equal weight" in your attention as you follow the flow of group conversation. Always identify the member to whom the remark is addressed if possible.

Leader's Writeup

As soon after the meeting as possible write down the most interesting facts of the meeting which seem to help in the interpretation of member reaction to the leader and the general atmosphere. Don't hesitate to give "impressions."

R.W.B. JACKSON LIBRARY
3 0005 03044704 2

155.4
T6U
v.16, no.3
Town. University
University of Town studies in
child welfare

155.4
T6U
v.16, no.3
Town. University
University of Town studies in child
welfare

ONTARIO COLLEGE OF EDUCATION
DEPT. OF EDUCATIONAL RESEARCH
UNIVERSITY OF TORONTO

Obtainable from the Department of Publications

Paper bound, $1.35
Cloth bound, $1.70